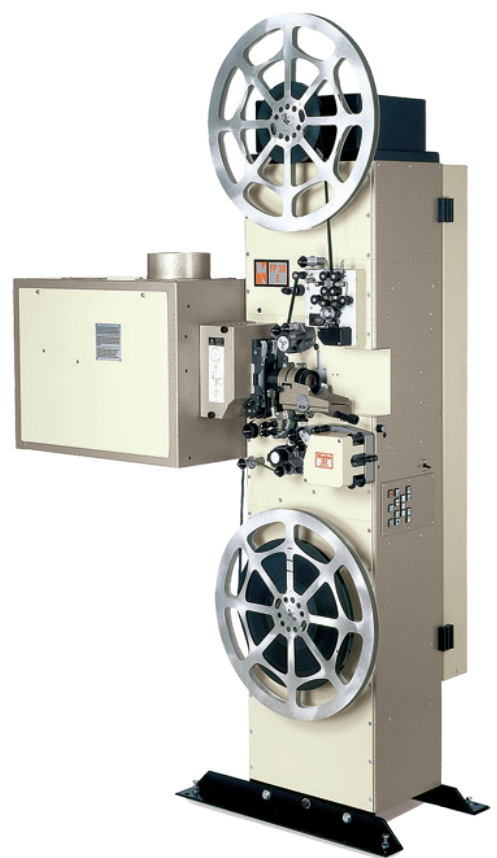


Operating Manual

FP 38 E PREMIERE Dual Format Projector



DIGITAL CINEMA
FILM TECHNOLOGY
STUDIO TECHNOLOGY
CUSTOMIZED SOLUTIONS
360° DISPLAY SYSTEMS

Preface

Dear customer,

this operating manual will help you get acquainted with the projector and to make use of its possible applications in accordance with the requirements.

This operating manual includes important hints for a safe, proper, correct and economic operation.

It will also help you to avoid danger, to reduce failures and to increase life and reliability of the projector.

This operating manual includes useful hints for proprietor and personnel obligations. It does not substitute, but supports, a thorough training period.

We confirm that the information given in this manual is true and correct to the best of our knowledge and belief. However, notwithstanding all best care and attention, technical inaccuracies and typographical errors cannot be fully excluded.

As far as we did not assure explicitly and written form any special characteristics and suitability of a product for a certain intended purpose, the statement in this manual are generally without obligation.

All descriptions, illustrations and technical data comply with the technical status of the product at the date of printing of this manual. Any modifications are subject to change without prior notice due to ongoing further development.

Imprint

All rights reserved

© Copyright by KINOTON GmbH,

Industriestraße 20a

Germany - 8 21 10 Germering

Printed in Germany, Issue November 2013

This operating manual – even in extracts – may only be reprinted or otherwise copied with special, written permission from KINOTON GmbH.

Editor responsible for the contents: KINOTON GmbH

Editing and layout: Carmen Auer - KINOTON GmbH

Hints / Own Notes

Contents

1	Safety	1
1.1	Safety Notes	1
1.1.1	General Hints	1
1.1.2	Dangers when Working with the Projector	1
1.1.3	Intended Purpose	2
1.1.4	Guarantee and Liability	2
1.2	Explanations of Symbols and Notes	2
1.3	Special Hazard Points	3
1.3.1	Electric Power Hazards	3
1.3.2	Warning Risk of Fire	4
1.3.3	Lamphouse Hazards	4
1.3.3.1	Broken Glass	4
1.3.3.2	Ultraviolet Radiation	4
1.3.3.3	High Voltage	4
1.3.4	Mechanical Danger	5
1.4	Preventing Projector Damage	5
1.5	Service	6
1.6	Protective Devices	7
1.6.1	Main Switch	7
1.6.2	IR Reflex Film Break Sensor	7
1.6.3	Film Stripper	7

2	Transportation and Installation / Mounting / Connections	9
2.1	Transportation	9
2.2	Delivery or Equipment Variations	9
2.3	Installation and Mounting	10
2.3.1	Place of Installation, Place of Operation	10
2.3.2	Important Hints for Installation	11
2.3.3	Additional Installation Hints	12
2.3.4	Mounting and Connecting the Lamphouse	12
2.3.5	Installing and Adjusting the Lamphouse Components.	13
2.3.6	Projector Terminal Strips	13
2.3.7	Connecting the Water Cooling.	14
2.4	Connecting the Non-Rewind System to the Projector.	14
3	Function and Components	15
3.1	Components Overview	15
3.1.1	Housing	16
3.1.2	Projection Components	16
3.2	Film Gate and Film Track	17
3.2.1	Film Pressure Skate	18
3.2.2	The Dowser	18
3.2.3	Single Aperture Plates.	19
3.2.4	Lens Holder	20
3.2.5	Lens Turret (option)	21
3.2.6	Rotating Shutter.	22
3.2.7	Combined Intermittent Sprocket	22
3.2.8	Framing	22
3.2.9	Combined Constant Speed Sprockets.	23
3.2.10	Changing the Film Gate and Sprocket Parts	24

3.3	Sound Devices	27
3.3.1	Reverse-Scan Sound Device (analog and optional DOLBY digital / upgradeable)	27
3.3.1.1	Components	27
3.3.1.2	Sound Tracks on the Films	28
3.3.2	16 mm Sound Device (optional)	28
3.3.2.1	Pre-Amplifiers / Delay Unit.	29
3.4	DTS/SDDS Reader	29
3.5	Film Cleaner (option).	29
3.6	Drive Components.	30
3.6.1	Main Drive.	30
3.6.2	PREMIERE Intermittent Sprocket Drive	30
3.6.3	Electronically Controlled Friction Drives	31
3.6.3.1	Friction Control	31
3.6.3.2	Reel Shaft on Change Flange	31
3.7	Electronic Components	32
3.7.1	Components in the Projector Door	32
3.7.2	Components on the Basic Unit	33
3.7.3	LED Board for Reverse-Scan Sound Device.	33
3.8	Automation Systems	34

4	Operating Elements	35
4.1	Main Switch	35
4.2	Operating Panel	35
4.3	Friction Control	36
4.4	16 mm Sound Unit (option)	37
4.4.1	Sound Delay Unit	37
4.4.2	Analog and Magnetic Sound Amplifiers	38
4.5	Remote Control Panels (option)	39
4.5.1	“BWR” Control Panel	39
4.5.2	Auditorium Panel	40
5	Operation and Troubleshooting	41
5.1	Switch On / Switch-Off the Projector	41
5.2	Threading for Projection Operation	42
5.3	Operation at Different Speeds	44
5.3.1	Projection / Forward Running at 24 fps or 25 fps (standard)	44
5.3.2	Reverse Running (option)	44
5.3.3	Projecting at VARIA Speed (option)	45
5.4	Change-Over Operation	45
5.5	Changing/Switching the Film Format	45
5.6	Troubleshooting	46
5.6.1	General Hints	46
5.6.2	Projector Troubleshooting Chart (Type 1 errors)	46
5.6.3	Projector Troubleshooting Chart (Type 2 errors)	46
5.6.4	Analog Sound	48
5.6.5	Digital Sound	48
5.7	Error Indication with LEDs	49
5.7.1	Interface Board	49
5.7.2	FPS 300 Power Supply Unit	49
5.7.3	Main Board	50

6	Cleaning / Maintenance / Repair	51
6.1	General Hints	51
6.2	Cleaning	51
6.3	Maintenance	53
6.4	Repair and Adjustments	54
6.4.1	Changing the Pilot Lamp	54
6.4.2	Adjusting the Pressure of the Skate	54
6.4.3	Adjusting the Film Pressure Skate Height	55
6.4.4	Changing the 35 mm Film Runner Strips	56
6.4.5	Adjusting the Lens Holder	56
6.4.6	Changing a Constant Speed Sprocket / Pad Shoe	57
6.4.7	Adjusting the Tension of the Pad Shoe Spring	58
6.4.8	Adjusting the Distance between Pad Shoe and Sprocket	58
6.4.9	Adjusting the IR Reflex Film Break Sensor	58
7	Parts and Wearing Parts	59
7.1	Film Gate Parts	59
7.3	Feed/Bottom Sprockets	59
7.4	Other Parts	59
7.5	Parts for Drives and Motors	62
7.7	Film Spools	62
7.8	Friction Shafts and Interchangeable Flanges with Shafts (35 mm)	62
7.9	Single Apertures	63
7.10	Adapter Rings for 35 mm Lenses	63

8	Technical Data, Circuit Diagrams and Plans of Terminal Connections	65
8.1	Projector Data	65
8.2	Reverse-Scan Sound Device Data	66
8.3	16 mm Sound Device Data	66
8.4	Plans of Terminal Connections	67
8.4.1	Plan of X1 Main Terminal Connections	67
8.4.2	Plan of Projector Functions X2 Terminal Strip	68
8.4.3	Plan of Auditorium Functions X3 Terminal Strip	69
8.4.4	BWR Control Panel on Terminal Strips (X2 + X3)	69
8.4.5	Sound Output on 8-pole Terminal Strip	70
8.5	Block and Circuit Diagrams	71
8.5.1	Block Diagram (Components Overview)	71
8.5.2	Block Diagram (Power)	72
8.5.3	Block Diagram (Signals)	73
8.5.4	Main Board Components Overview	74
8.5.5	Two Projectors at Change-Over Operation	75
8.5.6	Lamphouse for 230 V Mains Connection.	76
8.5.7	Lamphouse for 120 V Mains Connection.	77

1 Safety

1.1 Safety Notes

1.1.1 General Hints

- » Read this operating manual before operating the projector.
- » This operating manual is to be kept with the projector at all times.
- » For safe and trouble free operation of the projector a good working knowledge of basic safety regulations and the projector's correct use is required.
- » This operating manual contains the most important instructions for running the projector safely.
- » This operating manual must be read and understood by all persons working with the projector, with particular emphasis on all aspects regarding safety.
- » In addition, all valid regulations and measures concerning accident prevention must be observed.
- » The owner is responsible to assure that all persons who work with and / or operate the projector are familiar with safe operating practices and accident prevention techniques and have a complete working knowledge of the projector and all additional machines and components of the system.
- » Those persons who work with the projector are responsible:
 - to observe safe operating practices and accident prevention techniques
 - to have read and fully understand the safety chapter and the warnings within this operating manual.
- » The place on which the projector will be installed must be even, solid and clean.
- » Installation and basic adjustment must always be carried out by trained service personnel.

1.1.2 Dangers when Working with the Projector

Projectors are constructed according to the latest engineering and state-of-the art safety standards. The projector is only to be used for its intended purpose and is only used when functioning absolutely perfectly.

Serious danger may result from improper use of the projector, causing injury to the user or a third person, or damage may be done to the projector or other items in the vicinity.

Faults that could adversely affect safety must be rectified immediately.

The projector must not be used until any faults are rectified.

1.1.3 Intended Purpose

The projector is suitable to reproduce film images and sound.

Any other or further use is not classified as an “intended purpose”. KINOTON cannot be held liable for any damage resulting from different or extended operation.

As part of the “intended purpose” these tasks must be performed:

- » observing all instructions and warnings contained in this manual
- » inspecting the equipment for damage and correct function
- » implementation of maintenance and repair work.

1.1.4 Guarantee and Liability

By reference KINOTON’s “General Terms of Business” apply. They are available to the customer on conclusion of sale at the latest.

Guarantee and liability claims for damage to persons and property are invalid if due to one of the following causes:

- » improper use of the projector
- » improper assembly, commissioning, operating and maintenance of the projector
- » operation the projector with defective and / or non-functioning safety and protection devices
- » activating the lamphouse via the rectifier and not via the projector
- » disregarding of the instructions in the manual concerning transportation, storage, assembly, commissioning, operation and maintenance
- » modification of the projector without written authorisation from the manufacturer
- » connecting to power other than as specified
- » failure to monitor and/or replace parts subject to wear and tear
- » improper repairs
- » emergencies due to influence from outside bodies or force majeure.

1.2 Explanations of Symbols and Notes

Throughout this manual you will find the following symbols:



DANGER

This symbol indicates an imminent threat of danger to life and personal health. Disregarding this warning can result in serious personal injuries or highly dangerous injuries.



ATTENTION

This symbol indicates a possibly dangerous situation. Disregarding this warning can result in small personal injuries or damage to projector.

► **NOTE**

This symbol indicates where notes, user tips and useful information can be found. They serve to help use the projector to its fullest.



Always wear **face protection** when changing the xenon lamp.



Always wear **protection gloves** when changing the xenon lamp.



Always wear **protection jacket (Kevlar)** when changing the xenon lamp.

1.3 Special Hazard Points

1.3.1 Electric Power Hazards



DANGER

- ▲ The access to power supply must always be kept closed. Only authorized service personnel may access this area.
- ▲ Installation according to the local electrical code and regulations and work on the electrical supply conductors or circuits must only be done by qualified technical personnel.
- ▲ This projector should be operated from an AC power source. Ensure that the mains voltage and capacity matches the projector electrical ratings. Do not defeat the purpose of the grounding.
- ▲ Do not allow anything to rest on the power cable and do not locate the projector where persons will walk on the cable.
- ▲ Do not operate the projector with a damaged cable or if the projector has been dropped or damaged - until it has been checked for operation by a qualified service technician.
- ▲ Position the cable so that it will not be tripped over, pulled, or contact hot surfaces.
- ▲ If an extension cable is necessary, a cable with a current rating at least equal to that of the projector should be used to avoid overheating of the cable.
- ▲ Do not spill liquids of any kind on this projector. If any liquid is coming into the projector, switch off, disconnect from mains and call service.
- ▲ Do not use an accessory attachment which is not recommended by the manufacturer.
- ▲ The rectifier must be exclusively enabled from projector only.
- ▲ The 4060 DC ignition unit is directly supplied via the rectifier. Therefore the lamp can be ignited by switching on the rectifier itself. Igniting the lamp by switching on the rectifier at open lamphouse can cause serious injuries and damages to the lamphouse and projector.
- ▲ The safety devices in the lamphouse (door switches and air flow switch) must not be deactivated. Safe service work on open lamphouse is possible with functional safety devices only, because rectifier and mains power will be switched off.

1.3.2 Warning Risk of Fire



DANGER

- ▲ Do not cover the projector or the lens with any material while the projector is in operation.
- ▲ In the event of fire, use sand, **CO₂**, or **dry powder fire extinguishers**; never use water on an electrical fire.
- ▲ Always have **service** on this projector performed by authorized service personnel.
- ▲ **Projection room** must be well ventilated or cooled in order to avoid build up of heat.

1.3.3 Lamphouse Hazards

1.3.3.1 Broken Glass

In cold condition the xenon lamp has an inner pressure of about 8 to 10 bar (145 psi) and in hot condition of about 30 bar (435 psi). When a xenon lamp bursts, broken glass can cause suffer injury to face, eyes and arteries. Therefore it is absolutely necessary to wear protection with open lamphouse.



DANGER OF EXPLOSION

- ▲ Never bypass a door switch.
- ▲ Only work on open lamphouse and with xenon bulb with face protection (shield), neck protection and safety gloves which reach to the elbow.
If the xenon lamp explodes you can suffer injury to face, eyes and arteries.
- ▲ Dispose of the xenon bulb: Before removing xenon lamp put protective cover around it, pack xenon bulb in original package and give it back to your supplier.
- ▲ Only insert the new xenon bulb in protective cover. Remove cover after mounting the xenon bulb.

1.3.3.2 Ultraviolet Radiation



DANGER

- ▲ Operate projector with a closed lamphouse only.
- ▲ If you do some adjustments with an open lamphouse (look through visual hole), you have to use visual protection which blocks the ultraviolet radiation.
Never look into light of a xenon lamp without protective glasses!

1.3.3.3 High Voltage



DANGER

Ignite xenon lamp in closed lamphouse only.

1.3.4 Mechanical Danger



DANGER

- ▲ Do not work around the machine with long loose hair, or loose clothing such as scarves or ties, they may get trapped in the drive mechanism and pull you in.
- ▲ Only open shutter housing when projector is standing still with power disconnected. If the projector is running with covers open be careful and do not touch the rotating shutter or other moving parts. Serious cuts can result.
- ▲ Do not put your fingers between the film track and film pressure skate or between sprockets and pad shoes.

1.4 Preventing Projector Damage



ATTENTION

- △ The projector has been designed for use with a **specific lamp type**. Never use another lamp than specified.
- △ In order to ensure that the projector complies with electromagnetic capability (EMC) and safety requirements, it should be always operated with all **covers in place**.
- △ Do not spill **liquids** of any kind on this projector. If any liquid is coming into the projector, switch off, disconnect from mains and call service.
- △ Always switch off main switch, before **cleaning** the projector housing. To keep the cabinet looking brand-new, periodically clean it with a soft cloth. Stubborn stains may be removed with a cloth lightly dampened with mild detergent solution. Never use strong solvents, such as thinner or benzine or abrasive cleaners, since these will damage the cabinet surface.
- △ To ensure the highest optical performance and resolution, the projector lenses are specially treated with an anti-reflective coating. Therefore, avoid touching the coated lens surface.
To remove dust on the lens, use a soft dry cloth (Cleaning set from Kinoton).
Do not use a damp cloth, detergent solutions or thinner.

1.5 Service



ATTENTION

- △ Attempts to alter the **factory-set internal controls** or to change other control settings not specially discussed in this manual can lead to permanent damage to the projection unit and cancellation of the warranty.
- △ Do not attempt to **service** this projector yourself. Refer all projector servicing to a qualified Kinoton service center.
- △ When replacement parts are required, be sure the service technician has used **original replacement parts** or authorized replacement parts which have the same characteristics as the original parts. Unauthorized substitutions may result in degraded performance and reliability, fire, electric shock or others hazards. Unauthorized substitutions may void warranty.
- △ Upon completion of any service or repairs to this projector, ask the service technician to **perform safety checks** to determine that the projector is in proper operation condition.
- △ Xenon compact arc lamps are under high pressure. The lamp must be handled with great care. They may explode if dropped or mishandled. Whenever the protective cover is removed from the lamp, authorized protective clothing must be worn.

Copyright

Copyright of this manual remains in possession of KINOTON.

This manual is intended for the user and its staff only.

It contains regulations and operating notes that must not be copied, reproduced or otherwise transmitted, in whole or in part.

Infringement of copyright laws may lead to prosecution. Due to ongoing development, design details, features and specifications are subject to change without notice.

1.6 Protective Devices

All existing safety devices must be checked regularly

1.6.1 Main Switch

In case of an emergency, you can switch off the projector using the main switch (under the projector door). Push the switch to position "0". The red lamp in the switch turns off.

1.6.2 IR Reflex Film Break Sensor

The film break sensor (arrow) switches off the projector when no film is passing the sensor (e. g. at a film break). In this case the projector will be stopped.

► **NOTE**

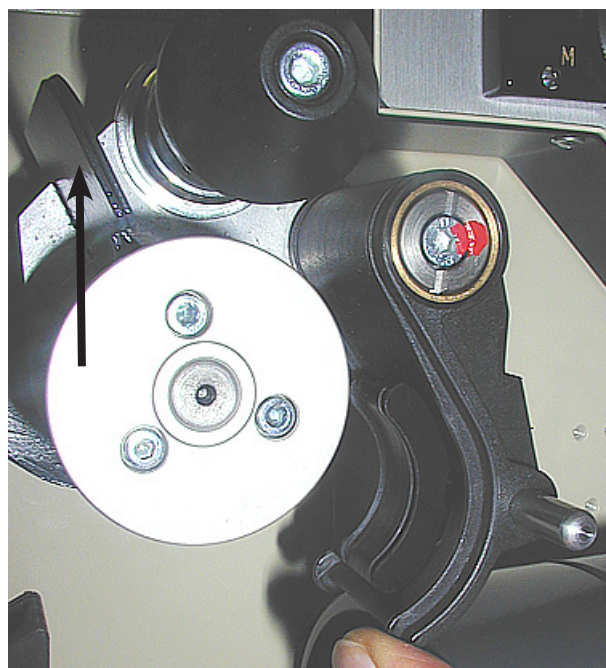
If your projector is equipped with an automation system the film break sensor can trigger a run of events.



1.6.3 Film Stripper

The film stripper (arrow) prevents film from winding around the sprocket after a film break or loss of a tape fixing has happened.

Film strippers are attached to all sprockets.



2 Transportation and Installation / Mounting / Connections

2.1 Transportation

Delivery by a forwarding agent, train, ship or aircraft

- » Projector is mounted (without lamp house and film reel) on a pallet and fixed with screws.
- » With delivery to countries over-sea the projector on pallet is packed in a wooden crate.
- » The accessories are packed into a box or into the wooden crate too.
- » Weight (gross): about 290 kg (640 lbs)

Storage

If projector is stored for a longer time:

- » Only store in dry rooms.
- » Choose a suitable protective coating or leave projector in the original coating.

► **NOTE**

Although most parts are delivered with a protective cover, you have to clean the projector and its components before the first start.

2.2 Delivery or Equipment Variations

- » Electronic friction drives for film spools up to 2,000 m and reel platters up to 600 m
- » Roller set for using with a rewind system (option)
- » Lamphouse
 - up to 2000 W
 - up to 7000 W
- » Reverse-scan sound device
 - with reverse running sprocket unit for rewinding (option)
 - optical stereo, upgradeable to Dolby Digital
 - optical stereo and Dolby Digital (option)
- » 16 mm sound device (optional)
- » Remote unit
 - focusing control (option)
- » Lens holder
 - electronic focusing control (option)
- » Lens turret (option)
 - 2 lenses and manual lens change
 - 3 lenses and manual lens change

- » Automation system (option)
 - DMP 1 Digital Matrix Programmer
 - CCA3 Cue Code Automation
 - SA2 Sequence Cinema Automation
 - EMK 1 Electronic Automation System
- » Film gate cooling unit (option)
- » Water cooling system (from 4000 W lamp capacity on)
- » Pedestals
- » Reader for DOLBY / DTS / SDDS (option)
- » Control panel BWR (option)
- » Auditorium control panel (option)
- » Film cleaner (option)
- » Operating manuals

2.3 Installation and Mounting



ATTENTION

- △ The projector will be delivered completely wired and factory tested.
- △ All installation has to be carried out by experts.
- △ Only use suitable hoisting machines (crane, fork-lift).
- △ Do not use unit parts as climbing aid.
- △ Electrical connections have to be in accordance with local regulations and be installed professionally.
- △ All installation should be carried out from service technicians only.

2.3.1 Place of Installation, Place of Operation

The place on which unit will be installed must be even, solid and clean.

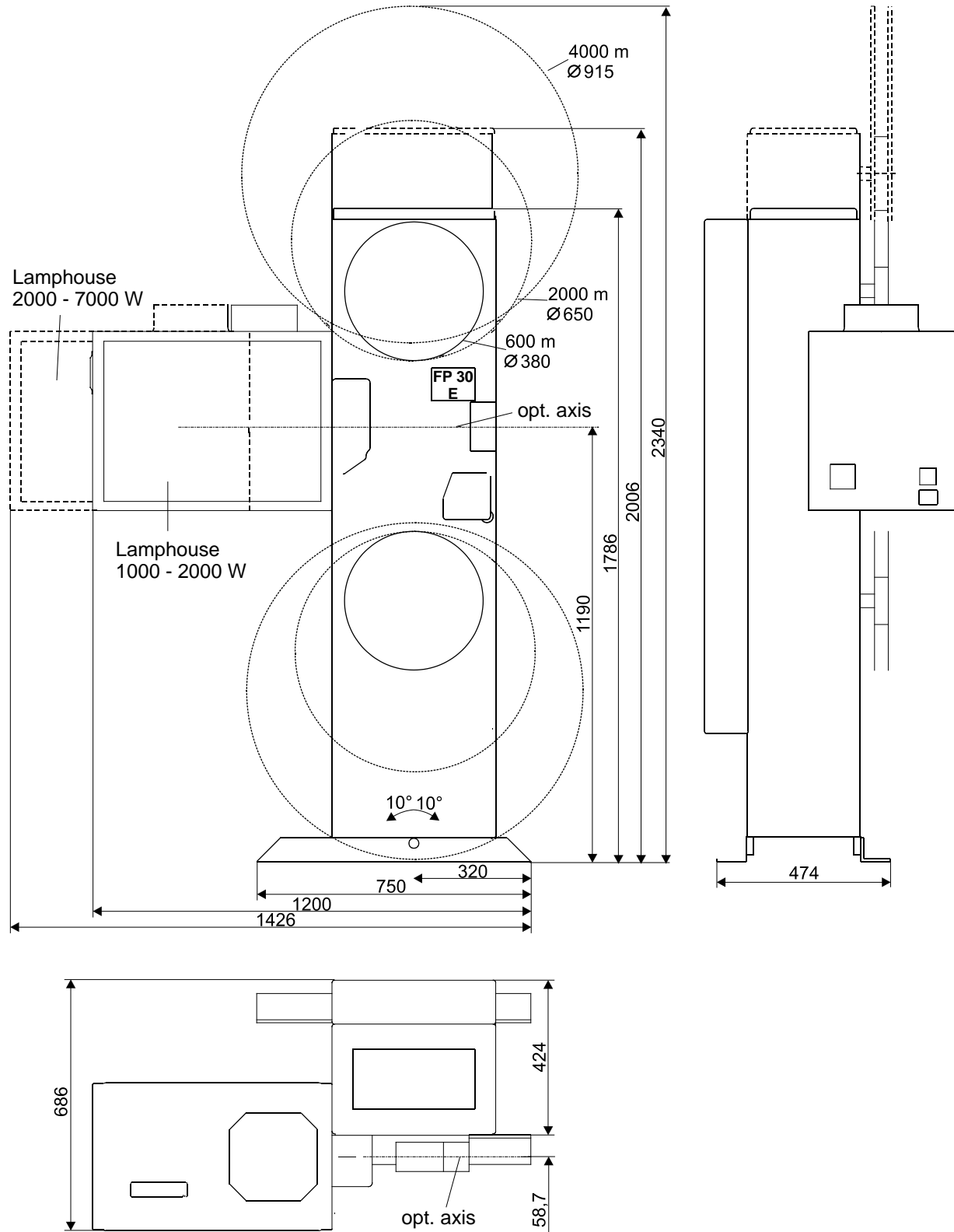
The figure on the next page shows the projector's dimensions.

Requirements of the projection room:

- » Humidity: 40 to 60 %
- » Temperature: 15 to 25° C
- » Max. sea level: 2000 m

2.3.2 Important Hints for Installation

Projector Dimensions



2.3.3 Additional Installation Hints



ATTENTION

- △ The 16² PE lines have to be high-flexible to derive the high-frequency ignition voltage.
- △ Do not use the wires in the lamphouse cable to connect the additional dowser. Lay the dowser connection in the lamphouse tube as short as possible.
- △ If you install an old building projector remove all not used old cables, wires and lines under the projector.
- △ If possible the heat exchanger must not have more than 10 m distance to the projector and the refrigerating set must not have more than 15 m distance to the heat exchanger. If the environment temperature is high and the wires are long, the hose is to be isolated because of condensation.
- △ The cooling water temperature has to be more than 15° C, to avoid a precipitation of condensed water on the film gate and the front gate.

2.3.4 Mounting and Connecting the Lamphouse

► NOTE

Mounting and connecting the lamphouse should be carried out by Kinoton service personnel.

Connecting the Lamphouse to the Projector

- ☛ The projector must be connected to the terminal strip in the lamphouse.
- ☛ The wires in the projector cable are signed corresponding to the terminals.

Connecting the Rectifier to the Lamphouse (DC wires)

- The rectifier DC cables must be connected to the ferrite core in the lamphouse.
 - The negative black cable must be connected onto the upper bolt on the ferrite core.
 - The red positive cable must be connected onto the lower bolt on the ferrite core.
 - The ends (on ferrite core and on rectifier) of the positive and negative cable should be marked with a blue and a red tape, to avoid changing the cables.

2.3.5 Installing and Adjusting the Lamphouse Components

► **NOTE**

▷ Mounting and adjusting the reflector and the initial installation of the xenon bulb should only be carried out by trained service personnel.

►

The universal lamphouse operating manual describes:

- a rough adjustment by the projectionist in case of need
- the exchange of the xenon bulb
- the adjustment of the screen illumination
- the adjustment of the current
- the mounting of the heat filter.

► **NOTE**

See “Universal Lamphouse” operating manual for information about inserting the reflector, the xenon lamp and the heat filter and about the necessary adjustments.

2.3.6 Projector Terminal Strips

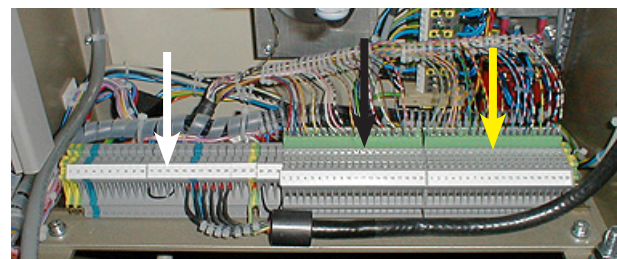
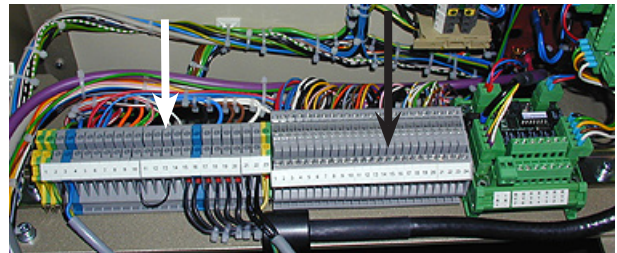
The whole terminal strip unit in the projector can be designed with 3 parts.
The number of parts depend on the projector’s design:

Terminal strip X1 - main terminal strip (white arrows) - is normally mounted.

Terminal strip X2 - projector functions (black arrows) is used with an automation system like EMK 1 or MP 15/20 E.

Relay node boards are necessary if the projector is equipped with CCA 3, DMP 1 or SA 2 automation system.

Terminal strip X3 - auditorium functions (yellow arrow) - is optionally mounted for using a control or auditorium panel.



- Connect the Phoenix plugs of the BWR control panel cable assembly to terminal strip 2 (projector functions) and to terminal strip 3 (auditorium functions) (black and yellow arrows).

► **NOTE**

- ▷ The projector will be delivered ready wired.
- ▷ Plans of terminal connections, see chapter 8.4.
- ▷ For more information about the relay node boards, see the corresponding operating manual of the automation system.

2.3.7 Connecting the Water Cooling

The film gate, the intermittent motor and its amplifier are water-cooled.



ATTENTION

- △ A water flow of 2 to 3 l/min is needed to get a water temperature of $18^{\circ}\text{C} \pm 2^{\circ}\text{C}$ ($64^{\circ}\text{F} \pm 10^{\circ}\text{F}$).
- △ The water temperature should not be less than 16°C , because of condensed water in the projector.
- △ If possible the heat exchanger must not have more than 10 m distance to projector and refrigerating set must not have more than 15 m distance to heat exchanger. If environment temperature is high and wires are long, the hose is to be isolated because of condensation water.

- Connect the inlet and outlet tubes of the water cooling system to the connecting pieces in the projector.

► NOTE

You will find the description of the water cooling unit in the corresponding operating manual.



2.4 Connecting the Non-Rewind System to the Projector

- » The installation of the non-rewind system is described in “ST 200 E / MT 600/2000” operating manual.
- » The roller set for the film run between the projector and the non-rewind system should not be mounted until the projector has its final position to the screen.

3 Function and Components

The two-format projector **FP 38 E** is suitable to reproduce all usual 35 mm film and sound formats and additional 16 mm film and sound formats.

Film is transported through the projector from top to bottom. The intermittent sprocket is directly driven via the PREMIERE drive unit.

The projector can be equipped with film reels up to 2000 m.

Two electronic frictions are driven by directly flanged DC motors.

The film can also be guided via a set of guide rollers to and from a platter system.

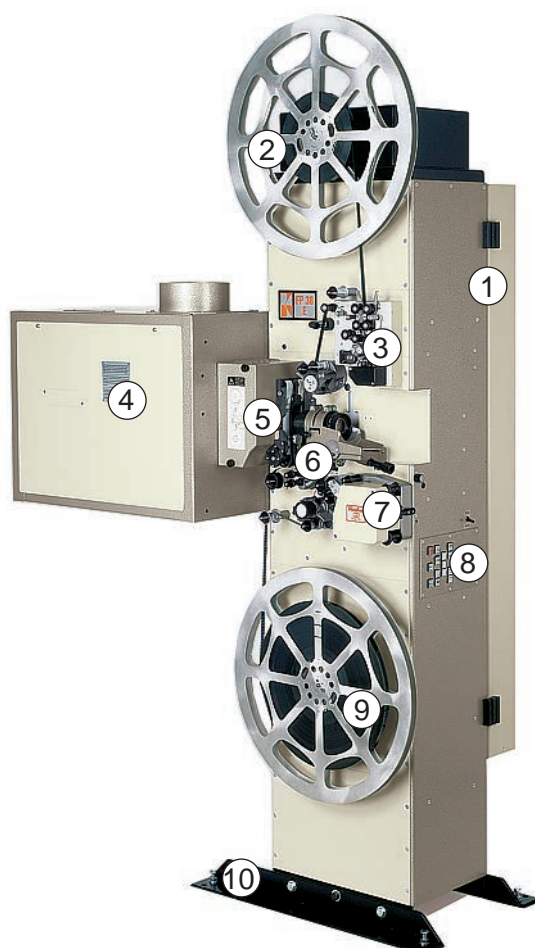
The projector can be equipped with an automation system like, EMK 1, CCA 3, DMP 1 and SA 2. Sensors can be installed in the to read metal foil tape for the purpose of an automation system.

An available reverse-scan sound device is mounted on projector head and is suitable to reproduce analog sound and optional digital sound DOLBY SR-D.

The FP 38 E projector can be equipped with an 16 mm sound device which is mounted ahead the film gate.

Other readers like DTS and SDDS reader can be installed on the projector.

3.1 Components Overview



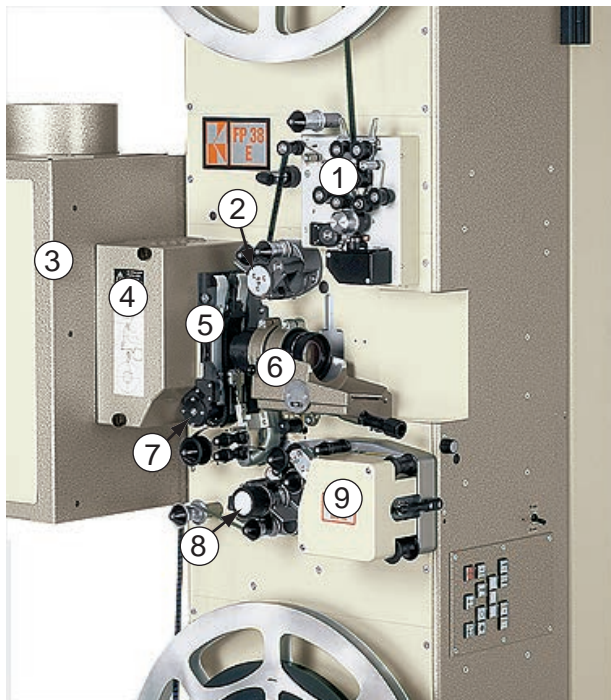
- ① Projector housing with door
- ② Take-off friction with film spool (option)
- ③ 16 mm sound device (option)
- ④ Lamphouse
- ⑤ Shutter housing and film gate
- ⑥ Lens holder
- ⑦ Reverse-scan sound device (35 mm)
- ⑧ Operating panel (in housing)
- ⑨ Take-up friction with film spool (option)
- ⑩ Pedestals (adjustable)

3.1.1 Housing

The projection equipment, sound devices, friction drives or/and set of guide rollers are mounted on the housing.

The drives, motors, the whole electrical equipment and the automation systems are mounted in the projector housing.

3.1.2 Projection Components



- ① 16 mm sound device (option)
- ② Combined feed sprocket
- ③ Lamphouse
- ④ Shutter housing
- ⑤ Film gate
- ⑥ Lens holder
- ⑦ Intermittent sprocket
- ⑧ Combined bottom / holdback sprocket
- ⑨ Reverse-scan sound device

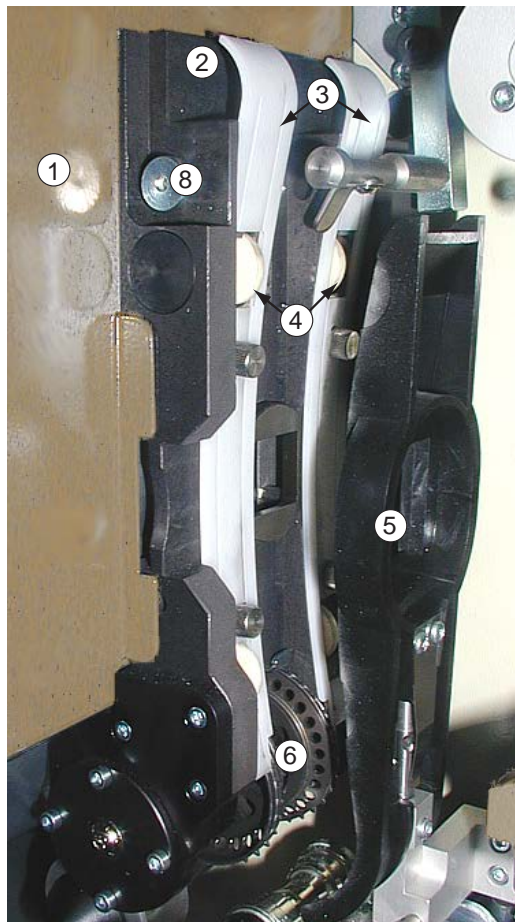
3.2 Film Gate and Film Track

In the film gate the film is positioned precisely. By adjusting the film pressure skate you can optimize the picture steadiness.

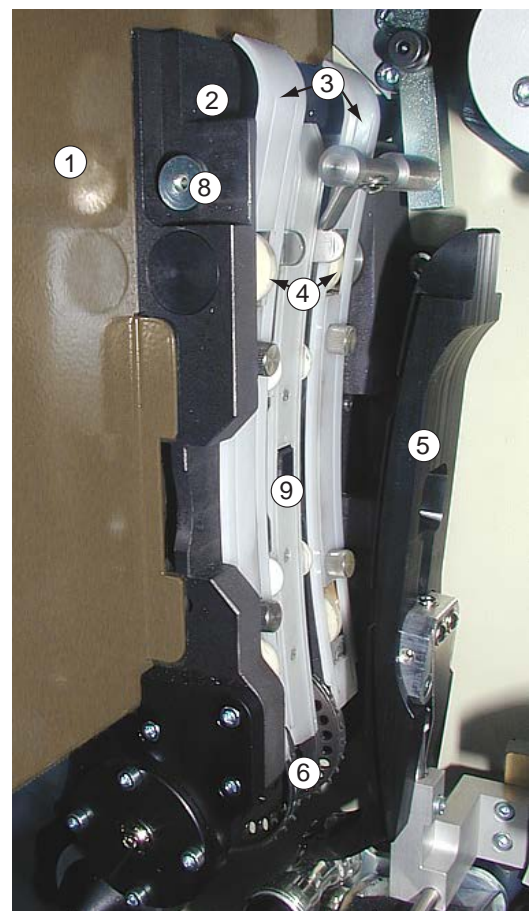
After threading the film, close the film track with the film pressure skate to guide the film. The four ceramic rollers guide the film laterally.

The FP 38 E is equipped with a film gate which can run 35 mm films and 16 mm films, therefore some components have to be changed with the film format.

35 mm film



16 mm film



- ① Shutter housing
- ② Film gate
- ③ Film runner strips (2)
- ④ Ceramics roller (4)
- ⑤ Film pressure skate 35 mm / 16 mm
- ⑥ Combined intermittent sprocket
- ⑦ Arresting knob for film track key
- ⑧ Film track key for 16 mm film

3.2.1 Film Pressure Skate

For smooth and silent film running it is very important that the pressure of the film skate is adjusted accurately.

► **NOTE**

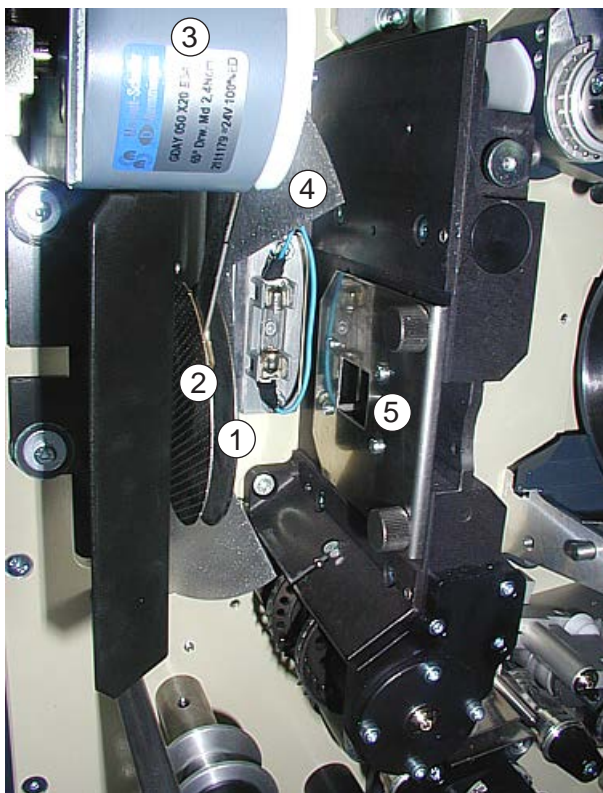
- ▷ Adjusting the film pressure skate, see chapter 6.4.2.
- ▷ Adjusting the height of the film pressure skate, see chapter 6.4.3.
- ▷ Changing the 35 mm film runner strips, see chapter 6.4.4.
- ▷ Changing film gate parts for format change, see chapter 3.2.10.

3.2.2 The Dowser

The dowser opens or closes the path of xenon light to the film gate.

Opening the dowser can be done by pushing the corresponding button on the operating panel or automatically controlled by an automation system and a cue foil on the film.

Additionally to the normal dowser the projector is equipped with a punched **heat protection dowser** for running the 16 mm film. Closing this dowser depends on film running speed. If a certain film running speed is falling short the dowser will be closed to protect film and film gate.



- ① Dowser
- ② Punched dowser
- ③ Dowser rotation solenoid
- ④ Shutter
- ⑤ Light baffle on film gate



ATTENTION

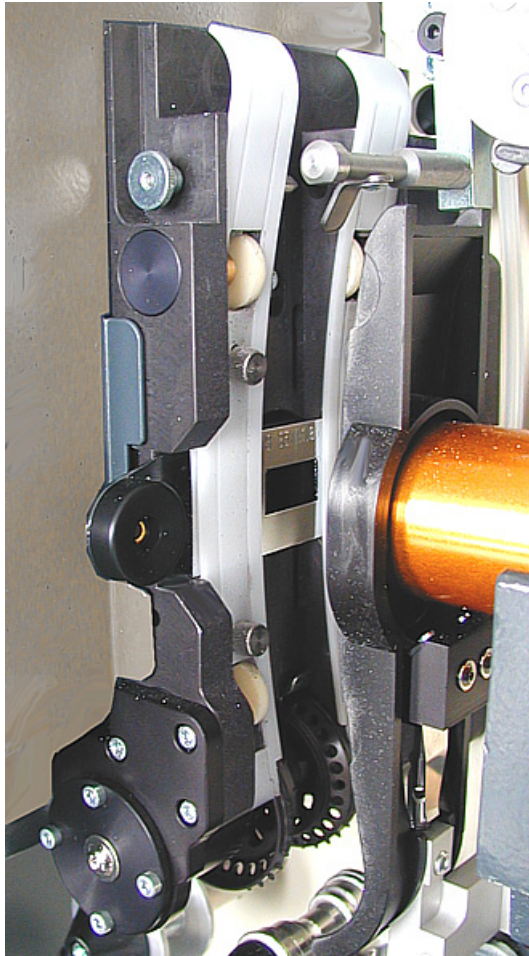
If the dowser does not close while the projector is stopped the film will burn.

3.2.3 Single Aperture Plates

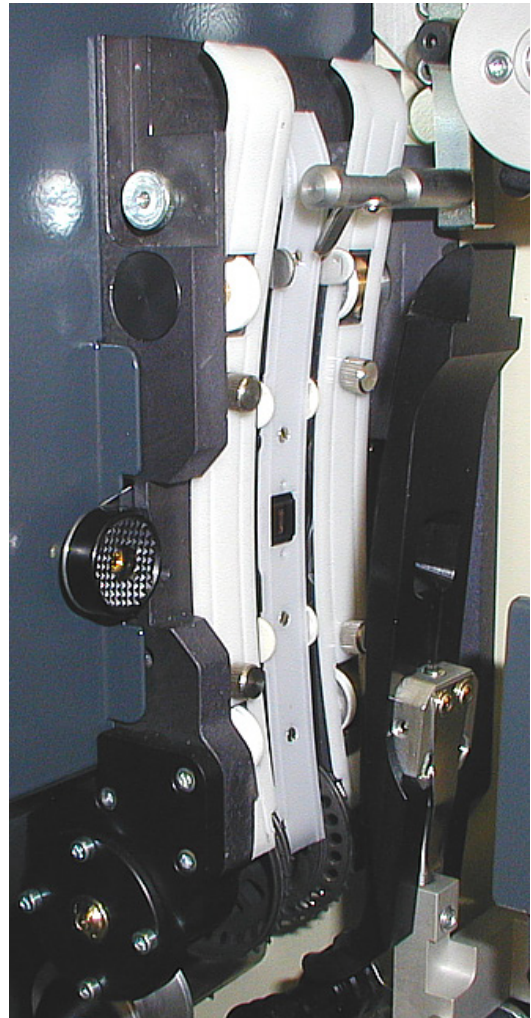
The desired 35 mm aperture plate (CS, NS, WS) for 35 mm film (left figure) has to be pushed **behind the runner strips**.

The 16 mm heat protection aperture (right figure) has to be pushed **behind the film track**. The aperture for the 16 mm film is integrated in the film track key.

35 mm film (CS, NS, WS)



16 mm film (heat protection aperture)



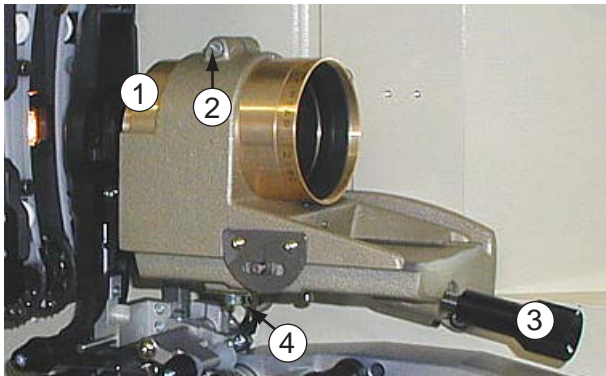
► **NOTE**

Changing the film gate parts at format changer, see chapter 3.2.10.

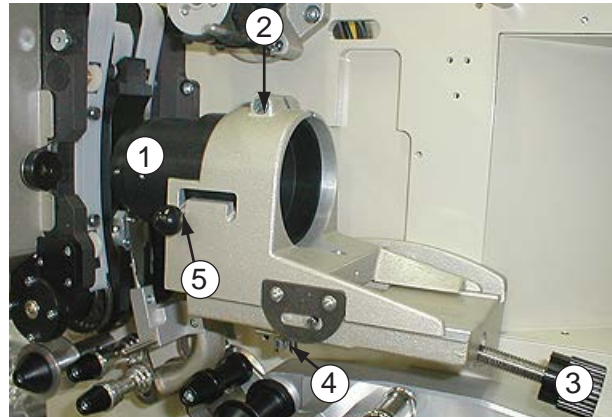
3.2.4 Lens Holder

The lens holder can be fed with a lens. There is a lens holder for 35 mm lenses and one for the 16 mm lens. The 16 mm lens needs an adapter.

35 mm lens holder



16 mm lens holder



- ① 16 mm lens with adapter
- ② Lens clamping screw
- ③ Focusing knob
- ④ Lever to remove the lens holder
- ⑤ Lens arresting knob (positioning / adjustment of 16 mm lens and adapter)

Changing the lens holder

- Remove the lens holder by pushing the lever ④ to loose the arresting.
- Put the desired lens holder onto the lens bed.

Inserting a lens

- For inserting a 35 mm lens or a 16 mm lens in its adapter loosen the clamping screw ②, put in the lens (+ adapter) ① and then tighten the screw again.

Focusing

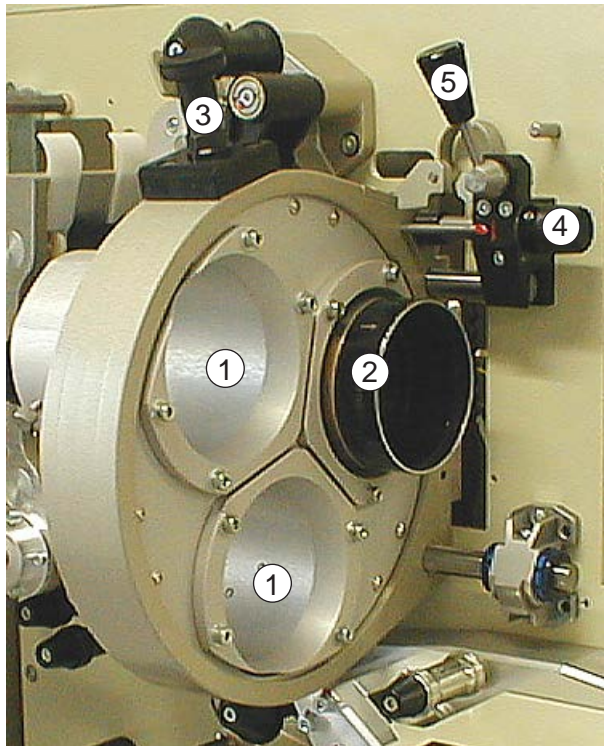
- Focusing can be done by turning the focusing knob ③.

► NOTE

- ▷ Due to the picture is standing in the centre of the film gate the adapter is eccentric if a super 16 mm film is projected.
- ▷ Adjusting the lens holder, see chapter 6.4.5.
- ▷ Changing the lens holder, see chapter 3.2.10.

3.2.5 Lens Turret (option)

The lens turret can hold two or three lenses. By turning the turret the needed lens can be positioned in front of the film gate.



- ① Lens tubes
- ② Lens in lens tube
- ③ Handle (arresting pin)
- ④ Focusing knob (manual)
- ⑤ Position lever for moving the lens turret away from the gate

- For inserting a lens loosen the knurled screws and push the lens into the lens tube.
- The tubes are labelled for a suitable lens: CS (1:2.40), WS (1:1.85) or NS (1:1.33).
- Precisely focus each lens in its tube by moving the lens in its tube and without adjusting the focus knob.
- Then fasten the lens with the knurled screw.

► NOTE

Some lenses may require rings to support the rear section; these are available from Kinoton.

- For easy film threading flip the position lever - the lens turret will move away from the film gate. **Make sure to put the lever fully back in position before projecting!**
- To rotate a lens into position, pull out the handle and turn the lens turret to the desired position. Let handle drop – lens turret is positioned.

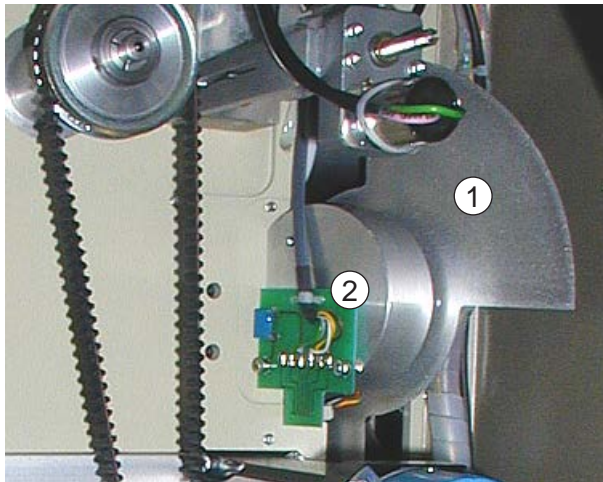
► NOTE

It is possible to set the handle so it remains up so that the turret can continuously rotate. This position is not used for normal operation.

3.2.6 Rotating Shutter

The rotating shutter interrupts the projection light once during the film transport and once during the picture standstill. (48 interruptions a second at 24 pictures a second).

The shutter is driven by an electronically controlled motor.



① shutter (2-blade)

② shutter drive



DANGER

Only remove or replace the shutter housing when the projector is off. If you have to work on the projector while it is running be very careful that you do not touch the rotating shutter. Serious cuts can result.

► **NOTE**

The shutter is factory-set. Adjustments should only be carried out by service staff.

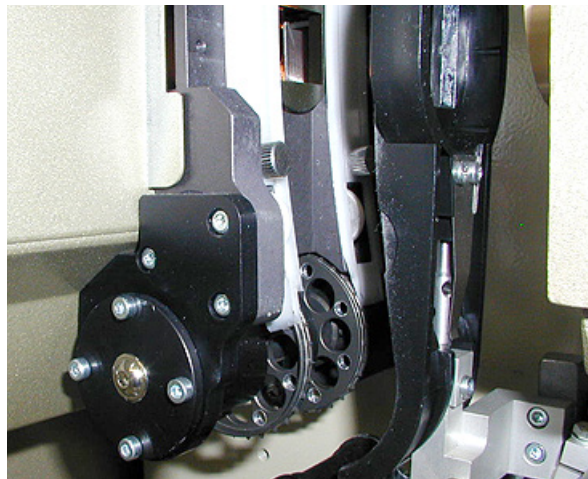
3.2.7 Combined Intermittent Sprocket

The intermittent sprocket is a very precise sprocket. It transports the film (35 mm or 16 mm) step by step through the film gate.

The intermittent sprocket is controlled by the PREMIERE drive unit.



► **NOTE**

The sprocket is factory-set. All adjustment must only be carried out by experts.



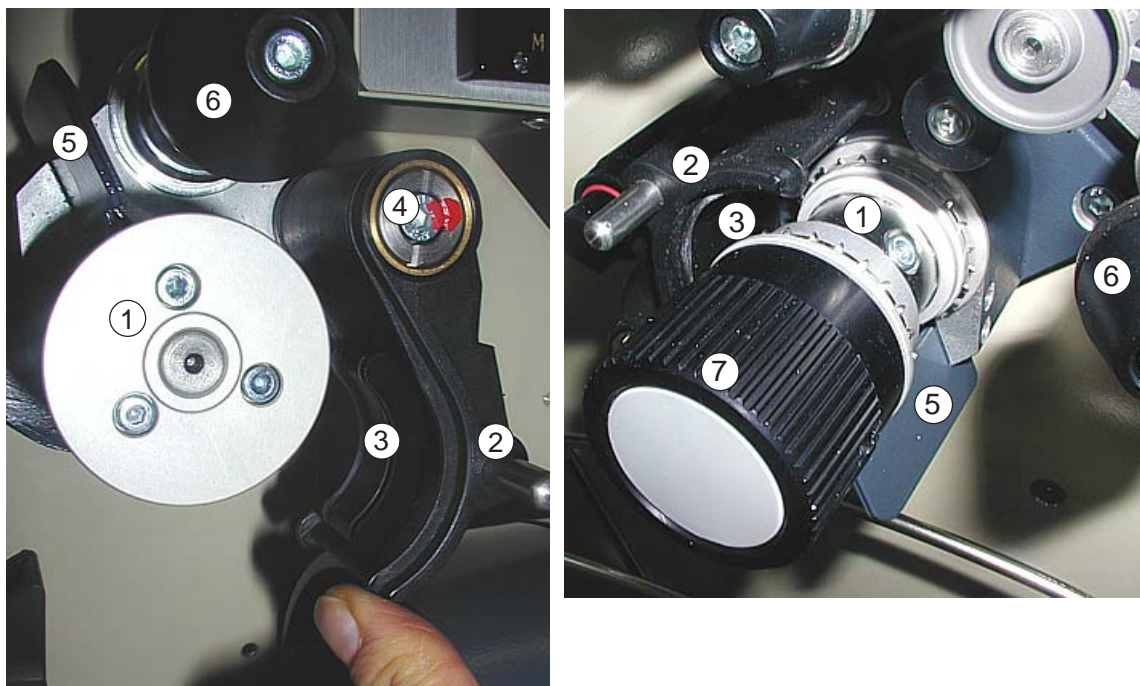
3.2.8 Framing

Framing allows to position the picture frame in the film gate by moving the film upwards or downwards.

Press and hold the  or  button to adjust the frame continuously up or down.

3.2.9 Combined Constant Speed Sprockets

Sprockets are designed to transport the film continuously. The teeth of the sprocket engage the perforations of the film. Both sprockets provide for equal loops before and after the film gate.



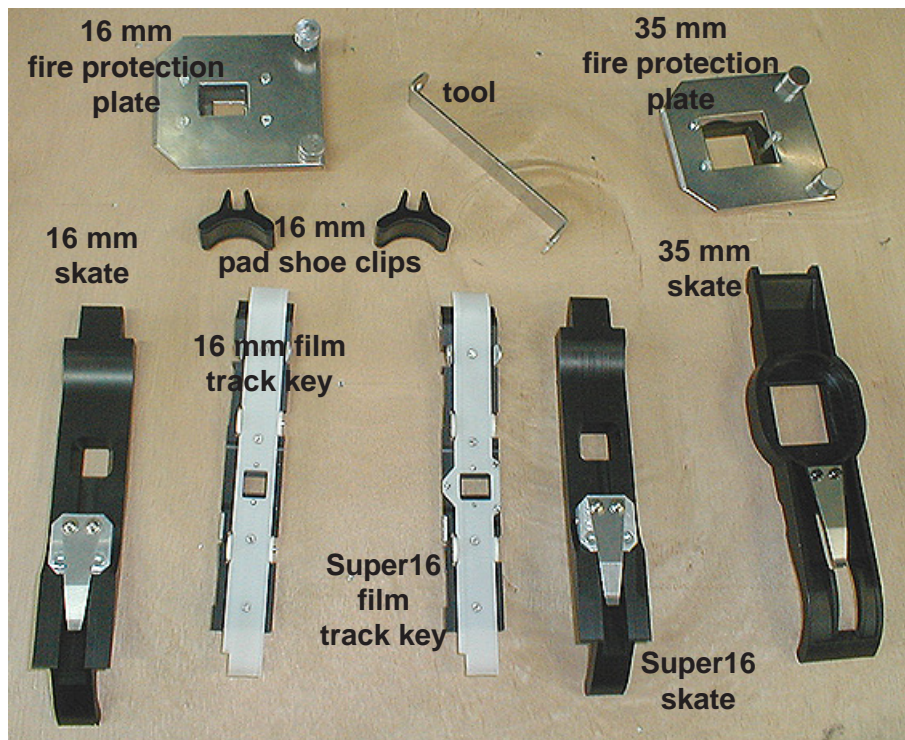
- | | |
|--|------------------------------|
| ① Combined feed sprocket / bottom or holdback sprocket | ③ Pad shoe clip (16 mm film) |
| ② Pad shoe with handle | ⑤ Film stripper |
| ④ Ring nut with spring | ⑦ Hand wheel |
| ⑥ Combined guide roller | |

- The feed sprocket (left figure) pulls the film from the take-off friction or platter to the film gate.
- The bottom sprocket (right figure) pulls the film out of the sound head and feeds it to the take-up friction or platter.
- The pad shoe holds the film on the sprocket.
- The pad shoe clip is suitable to hold the 16 mm film around the combined sprocket.
- The film stripper prevents broken film from being wound up around the sprocket.
- With the handle you can open the pad shoe to thread the film.

► **NOTE**

- ▷ Changing a constant speed sprocket and a pad shoe, see chapter 6.4.6.
- ▷ Adjusting the tension of the pad shoe spring, see chapter 6.4.7.
- ▷ Adjusting the distance between pad shoe and sprocket, see chapter 6.4.8.
- ▷ Adjusting the film break sensor, see chapter 6.4.9.
- ▷ Inserting the pad shoe clip, see chapter 3.2.10.

3.2.10 Changing the Film Gate and Sprocket Parts

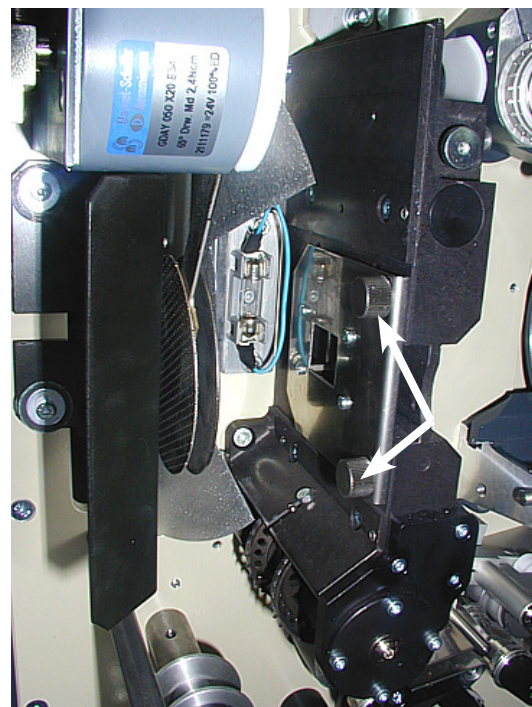


Changing the Fire Protection Plate (not water-cooled film gate)

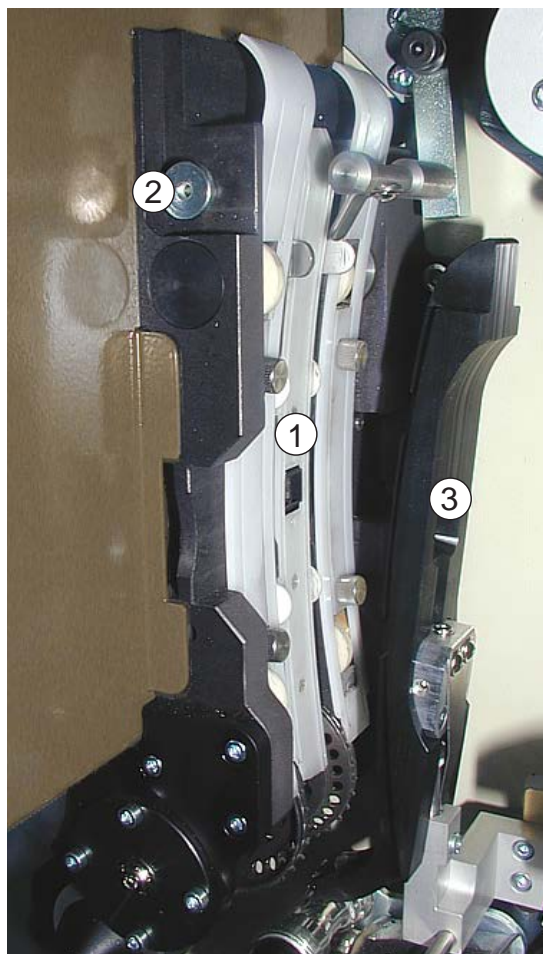
► **NOTE**

The fire protection plate has to be changed when the film gate is not water-cooled.

- Switch off the projector and remove the shutter housing.
- Release the knurled screws (arrows) and remove the fire protection plate.
- Insert the other plate and fasten it with the two knurled screws.
- Put on the shutter housing again.



Changing the Film Pressure Skate / (De-) Installing the Film Track Key



① film track key (with 16 mm aperture)

② arresting bolt

③ film pressure skate (16 mm)

Film track key

(only for 16 mm / Super16 formats):

- Pull-out the arresting bolt with the aid of the delivered angled tool - push-in the arresting bolt to arrest it.
- Remove or insert the film track key.

Film pressure skate

- Put-on or put-off the film pressure skate.

Inserting the Aperture Plate

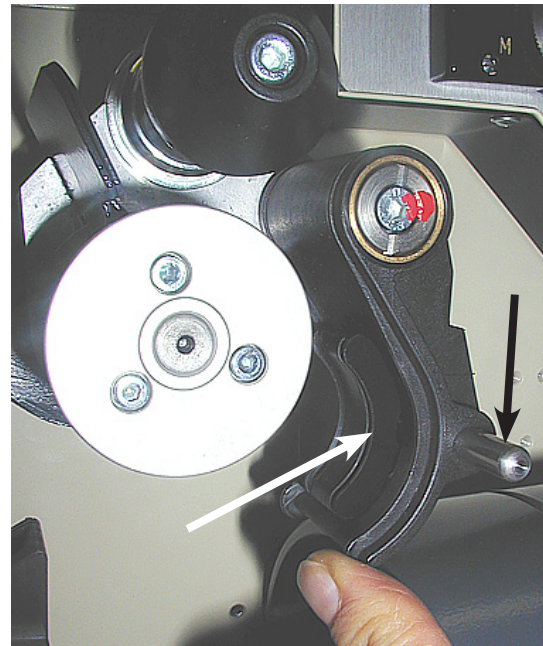
- For 35 mm film, put CS, WS or NS aperture plate **behind the film runner strips** (white arrow).
- For 16 mm / Super16 film, put 16 mm or Super16 heat protection aperture plate **behind the film path** (black arrow). The necessary aperture is built in the film track key.



(De-) Installing the Pad Shoe Clip (for 16 mm / Super 16 mm)

16 mm / Super 16 film

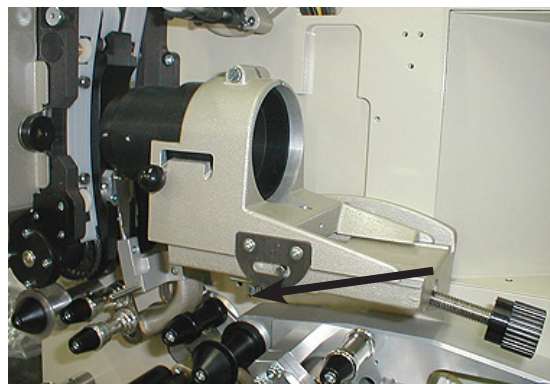
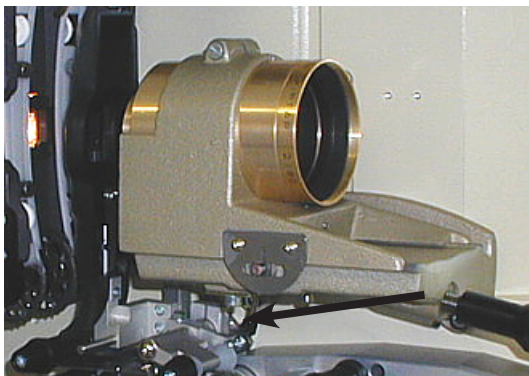
- Inserting the pad shoe clip (white arrow) by pressing the key from the pad shoe inside on the shaft of the handle (black arrow) to open the pad shoe.
- Observe the correct position of the clip in the pad shoe.



35 mm film

- Remove the pad shoe clip.

Changing the Lens Holder



Removing the lens holder

- Push the arresting lever backwards (arrows) and move the holder to the film gate direction – the spring under the holder disengages the arrest of the lens holder.
- Tilt the holder and remove the pulling pin out of the scale slit.

Installing the lens holder

- Put the holder onto the lens bed by simultaneously threading the pulling pin into the scale slit.
- Push the arresting lever to the front – the spring pulls the lever forwards – the holder is arrested.

3.3 Sound Devices

3.3.1 Reverse-Scan Sound Device (analog and optional DOLBY digital / upgradeable)

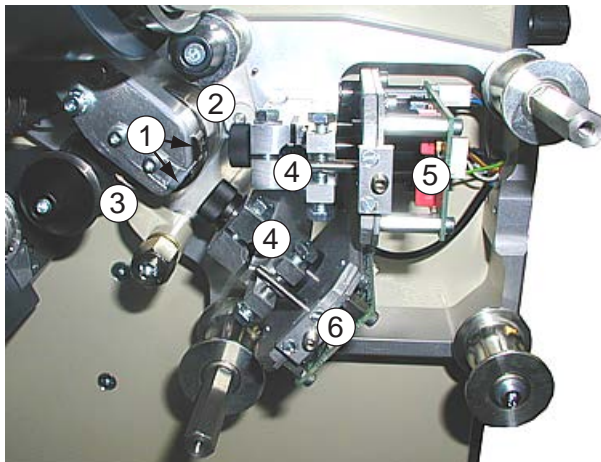
Reverse-scan sound devices scan the sound track (analog and optional DOLBY digital) on the film via red LEDs. An only analog sound device is upgradeable with DOLBY digital.

► **NOTE**

- ▷ The reverse scan sound head is delivered factory checked and adjusted.
- ▷ Optional cue sensors for reading metal foil tapes can be mounted in the reverse scan sound device.



3.3.1.1 Components



- ① LED holder with optional second digital LED
- ② Sound shaft (drum)
- ③ Sound pressure roller
- ④ Analog (upper) and optional digital (lower) sound optics
- ⑤ p. c board with solar cell (analog)
- ⑥ p. c. board with CCD-unit (digital)

3.3.1.2 Sound Tracks on the Films

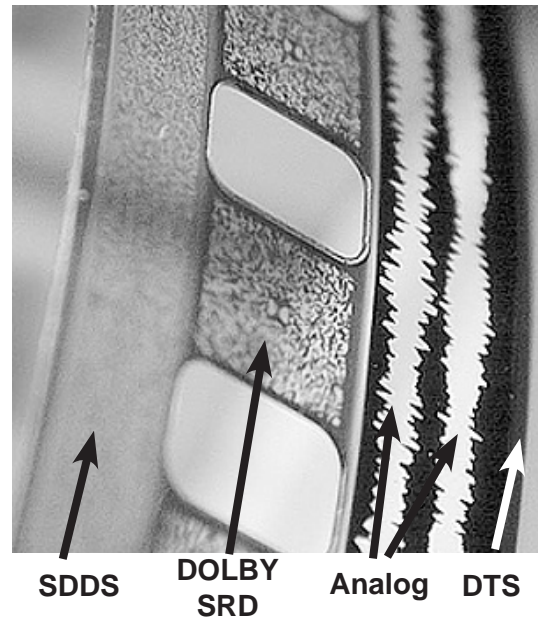
Analog sound is printed as two wavy lines on the film.

The height of the amplitude signifies loudness, frequency signifies pitch.

The **Dolby digital sound** information (DOLBY SR-D) is encoded between the perforations.

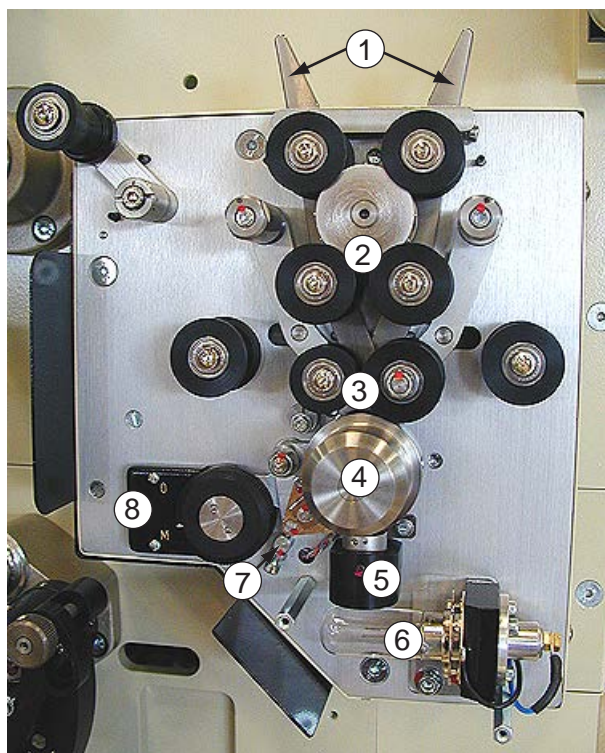
The **DTS digital sound** information is encoded between the picture and the analog sound track.

The **SDDS** information is encoded on the edges of the film.



3.3.2 16 mm Sound Device (optional)

The 16 mm sound device is suitable to scan analog and magnetic sound tracks on a 16 mm film. The magnet sound track is attached on the lateral film side.



- ① Pressure bars for omega drive
- ② Omega drive rollers
- ③ Sound pressure rollers
- ④ Sound shaft (drum)
- ⑤ Analog sound optics
- ⑥ Exciter lamp (here uncovered)
- ⑦ Magnet sound head
- ⑧ Switching between analog sound and magnet sound

- To thread a 16 mm film open the pressure roller bars.
- To switch from the analog sound to the magnet sound turn the switch to the desired position:
 - analog sound to "O" (Optics)
 - magnet sound to "M" (Magnetic).

3.3.2.1 Pre-Amplifiers / Delay Unit

The digital sound delay is suitable to set a delay to synchronize picture and sound because of the 16 mm sound device position - the sound is read before the picture.

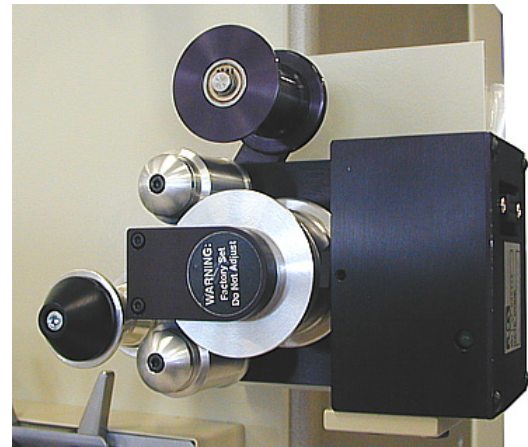
A delay of 129 frames has to be synchronized. The maximum delay can be 8 seconds (at 16 fps) depending on the projection speed.



3.4 DTS/SDDS Reader

Optionally a DTS (see figure) or SDDS reader can be used to scan the corresponding sound track on the film.

The readers will be fastened with special holders on the projector.



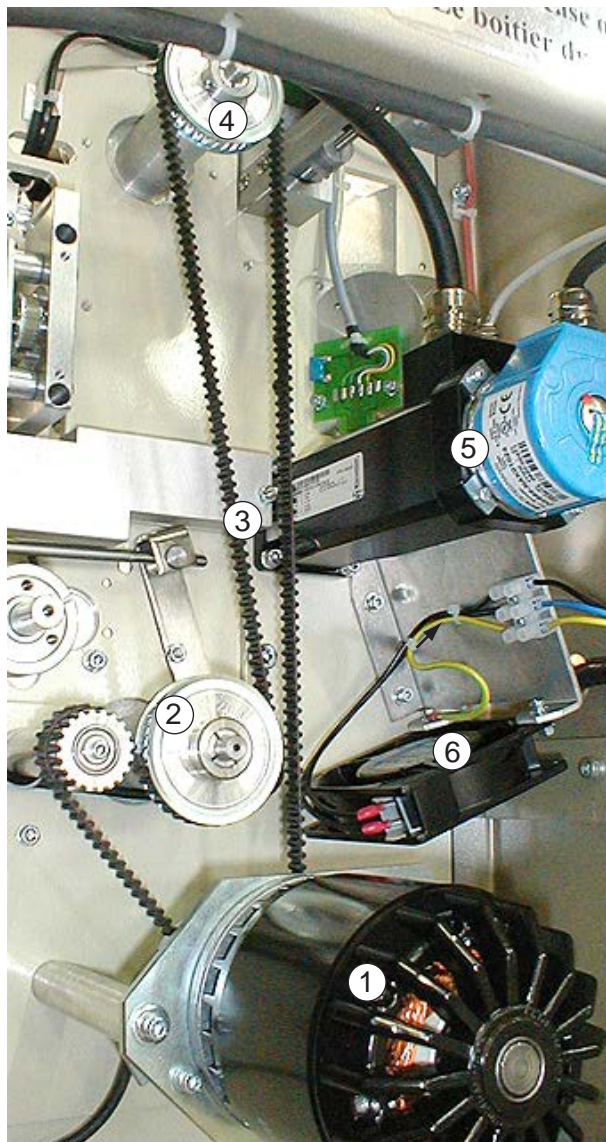
3.5 Film Cleaner (option)

Optionally the projector can be equipped with a film cleaner.

3.6 Drive Components

► **NOTE**

- ▷ In this chapter you will get an overview of the drive components, which are mounted in the projector.
- ▷ The projector door should only be opened by authorized service staff.
- ▷ All work on drives should be carried out by experts only.



- ① Main drive motor
- ② Lower/holdback sprocket shaft & cog
- ③ Toothed belt (Supertorque)
- ④ Upper/feed sprocket shaft & cog
- ⑤ Intermittent sprocket motor
- ⑥ Fan

3.6.1 Main Drive

Via toothed belts and gears the following shafts are driven by the main drive motor ①:

- » Bottom sprocket ②
- » Feed sprocket ④
- » Take-up mechanical friction

The main drive encoder is directly positioned behind the main drive motor on their common shaft.

3.6.2 PREMIERE Intermittent Sprocket Drive

Via pulses the main drive encoder counts quantity of film (transport unit = 1 picture), which is transported out of feed sprocket into film gate.

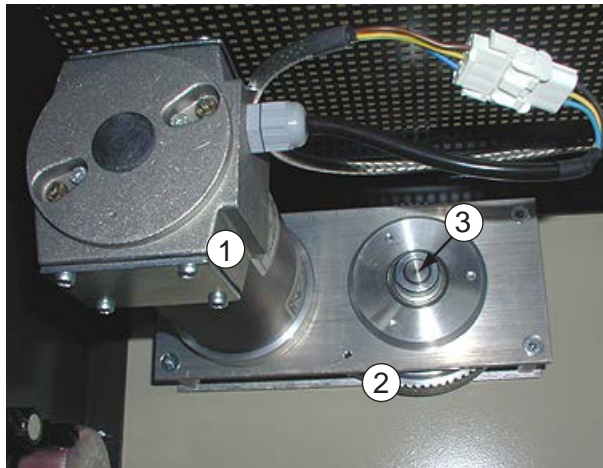
If one “transport unit” is completely counted and shutter position is dark the motor of intermittent sprocket carries on film for one picture.

This operation is controlled by a microprocessor which is mounted on the main board.

3.6.3 Electronically Controlled Friction Drives

The friction is a shaft, which is driven with a constant turning moment by a motor.

If the projector is equipped with friction motors for driving the friction shafts electronically controlled the film can run reverse.



- ① Friction motor
- ② Friction drive with toothed belt
- ③ Friction shaft

3.6.3.1 Friction Control

► **NOTE**

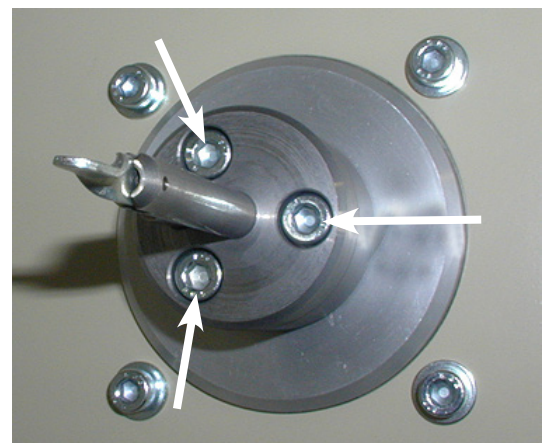
- ▷ Normally the set value is pre-adjusted and have not to change. If adjustments are necessary, they should be carried out from Kinoton service only.
- ▷ Operating the frictions, see chapter 4.3.

3.6.3.2 Reel Shaft on Change Flange

The reel shaft is mounted with a changeable flange (for 35 mm or 70 mm film).

To fix a film spool/reel you have either to close lock bar or screw on a knurled nut.

- To change the flange loosen the 3 Allen screws (arrows) and change the flange.

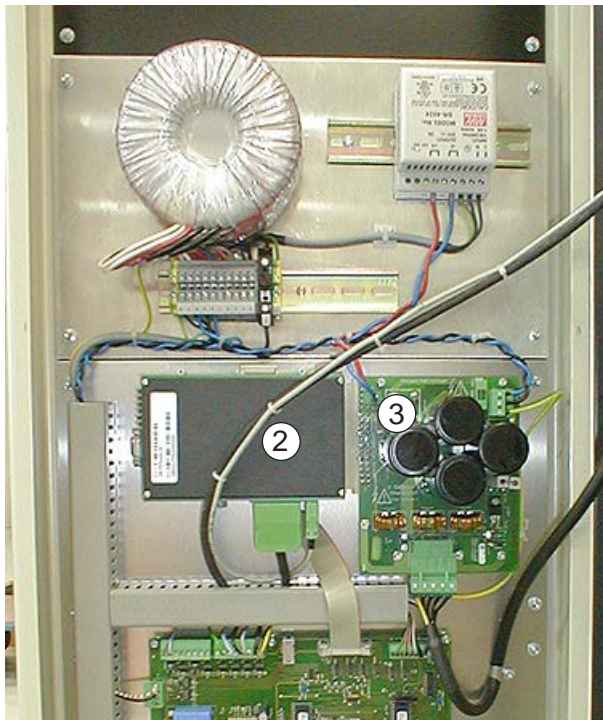


3.7 Electronic Components

► **NOTE**

- ▷ In this chapter you will get an overview of the electronic components, which are mounted in the projector.
- ▷ The projector door should only be opened by authorized service staff.
- ▷ All work on electronic parts should be carried out by experts only.

3.7.1 Components in the Projector Door



- ① Main board
- ② FPS amplifier
(for intermittent sprocket drive)
- ③ FPS power supply unit
- ④ FPS power supply unit

The **main board** is the projector's control center.

It provides:

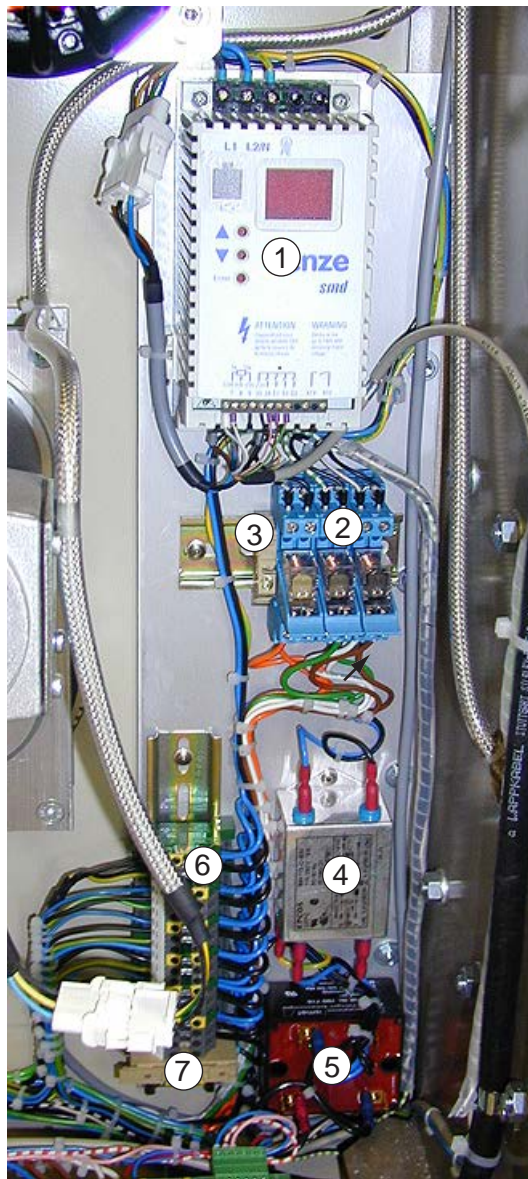
- » DIP switches for setting projector functions
- » LEDs for, e. g. shutter adjustment indication or voltage error indication
- » interfaces for different connections.

The **FPS unit** amplifies, powers and controls the intermittent sprocket drive

► **NOTE**

- ▷ Different automation systems can be mounted in the projector door.
- ▷ All adjustments should be carried out by experts.
The adjustments are described in cinema PREMIERE projector's service manual.
- ▷ Main board block diagram is shown in chapter 8.4.4.

3.7.2 Components on the Basic Unit



- ① Frequency inverter
- ② Relays (C/O, RUN, XENON)
- ③ Fuse
- ④ Mains filter
- ⑤ Current at make limiter
- ⑥ Internal terminal strip
- ⑦ Main fuse 6.3 AT

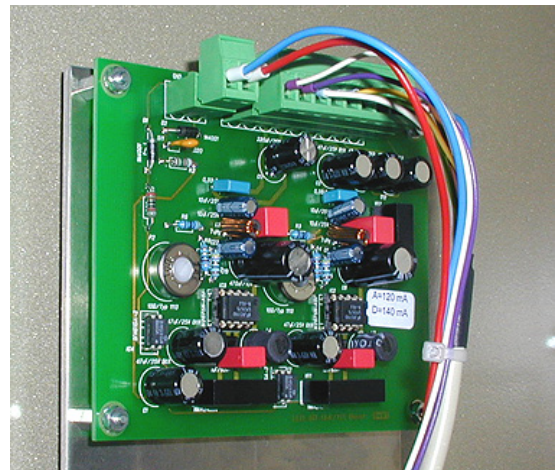
► **NOTE**

Adjusting the frequency inverter should be carried out from Kinoton service or experts only (see cinema PREMIERE projector's service manual).

3.7.3 LED Board for Reverse-Scan Sound Device

The LED board can be designed for analog and digital sound LED's supply or for analog LED's supply only.

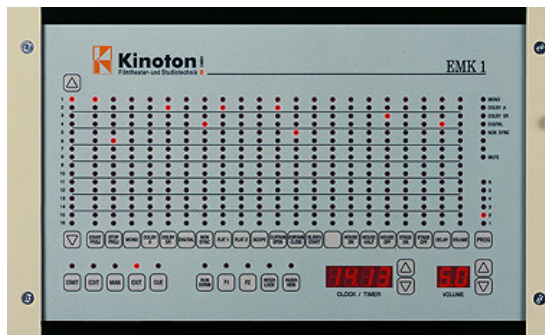
The LED board is powered via the projector with 24 V.



3.8 Automation Systems

The projector can be equipped with the different automation systems.
As follows you get an overview of possible automation systems:

EMK1 Electronic Matrix Programmer



DMP 1 Digital Matrix Programmer



SA 2 Sequence Automation System



CCA 3 Cue Code Automation System



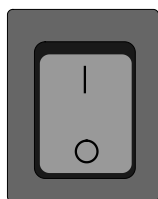
► **NOTE**

See the corresponding operating manual for more information.

4 Operating Elements

4.1 Main Switch

The main switch is positioned under the projector door.



Main switch in position I:

Current transfer is switched on.
The switch lights up red.

Main switch in position 0:

Current transfer is switched off.
The switch is off.

4.2 Operating Panel



Projector STOP



Frame POSITION



Change-over ON or OFF



Dowser OPEN



Dowser CLOSE



Frame UP



Projector FORWARD START



Film speed 24 fps or 25 fps



Focusing + (option)



Focusing - (option)



VARIA speed or 24 fps (option)



Frame DOWN

16 mm

Film format switch

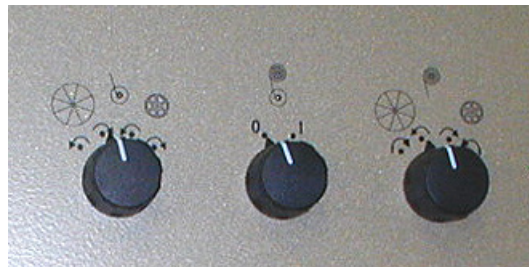


To activate the desired format the projector must be switched off and switched on again.

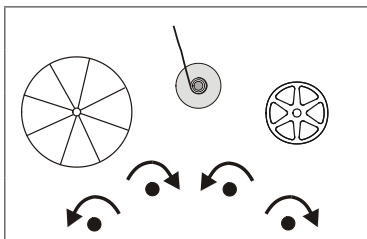
4.3 Friction Control

► NOTE

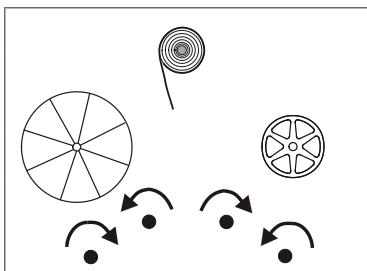
Depending on your demands, the size of frictions can vary. Generally you can select between a large (e. g. 2000 m) and a small (e. g. 600 m) friction.



Selection for take-up friction

	Switch position	Reel size	Tension direction
	complete left	large	left
	half left	large	right
	half right	small	left
	complete right	small	right



Selection for take-off friction

	Switch position	Reel size	Tension direction
	complete left	large	right
	half left	large	left
	half right	small	right
	complete right	small	left

► NOTE

- ▷ The adjusted turning direction (left or right) is that direction which is necessary to tension the standstill film.
- ▷ Always adjust the turning direction for take-off and take-up friction in a way that film is stressed.

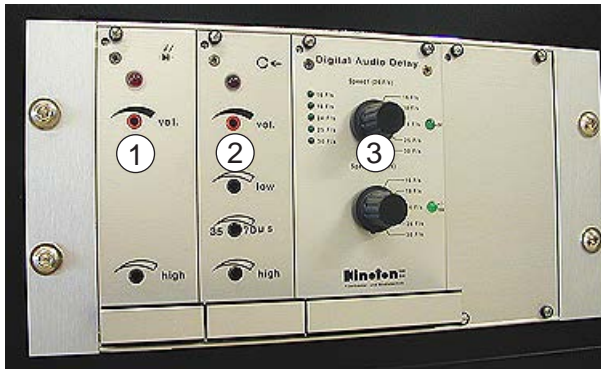
Switch on/off the friction drive:

-  switch in position "0": friction motors are switched off
-  switch in position "1": friction motors are switched on

0. 1



4.4 16 mm Sound Unit (option)

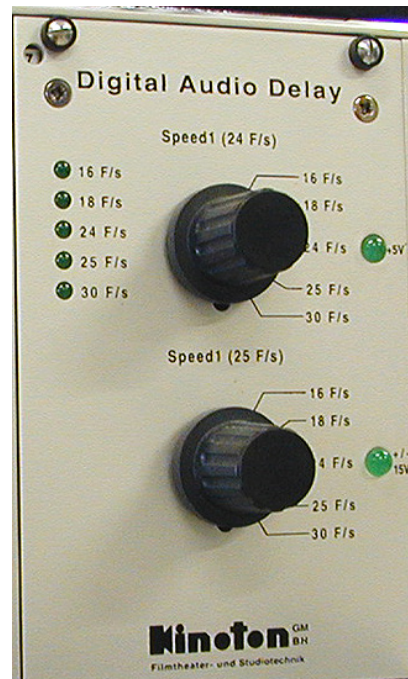


- ① Analog sound amplifier
- ② Magnetic sound amplifier
- ③ Sound delay unit

4.4.1 Sound Delay Unit

LEDs:
indicate the active
projection speed setting

Speed:
delay at film speed of
25 frames/second



Speed:
delay at 24 fps
illuminates if 5 V power
supply is active


illuminates if ± 15 V power
supply is active

Because of the 16 mm sound device position - the sound is read before the picture - it is necessary to set a delay to synchronize picture and sound.

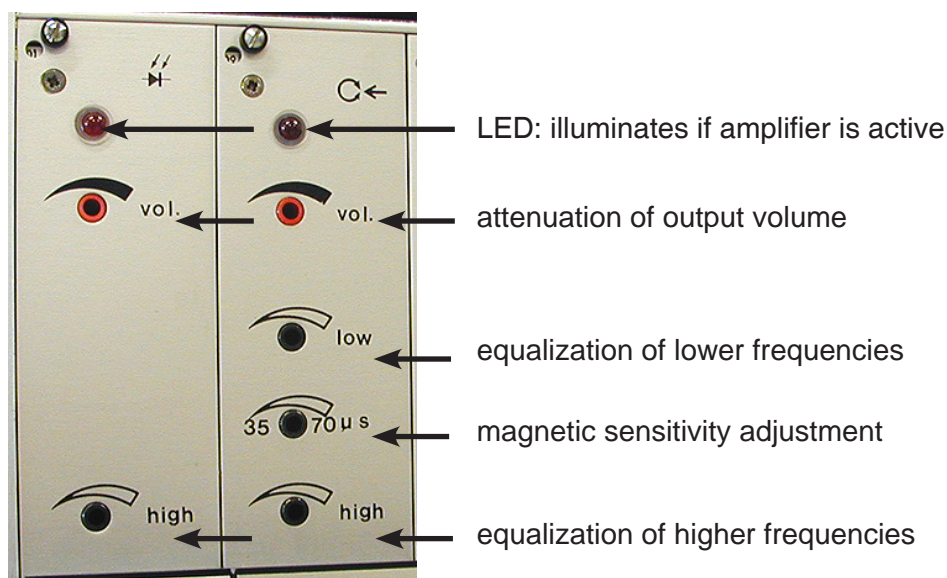
- Set the desired film speed, which is corresponding to a certain delay (24 or 25 fps).
- ➡ The LEDs indicates the current delay setting corresponding to the film speed.
- Normally the rotary switches "Speed" are factory-set to 24 F/s and 25 F/s corresponding to projection speed of 24 fps and 25 fps.

► NOTE

The delays will be automatically switched by activating 24 fps or 25 fps, therefore use

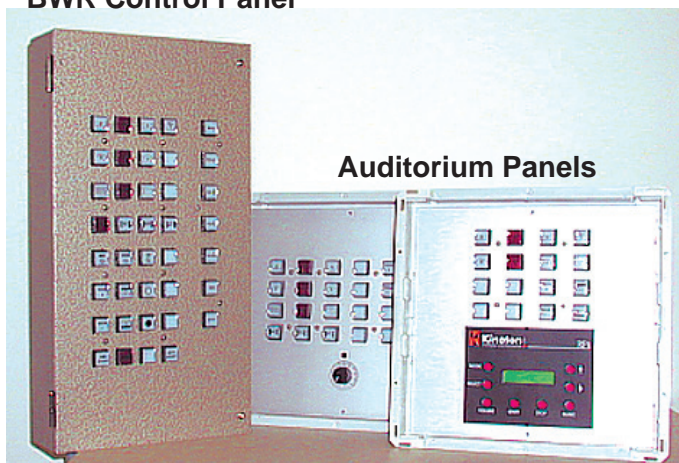
 switch.

4.4.2 Analog and Magnetic Sound Amplifiers




























4.5 Remote Control Panels (option)















BWR Control Panel



4.5.1 “BWR” Control Panel

 House light ON	 Stage light ON	 Focusing + (option)
 House light HALF	 Stage light STOP	 Focusing - (option)
 House light STOP	 Stage light OFF	 Dowser OPEN
 House light OFF	 CS format	 Dowser CLOSE
 Masking format 1	 WS format	 Frame UP
 Masking format 2	 NS format	 Frame DOWN
 Masking format CS	 Curtain OPEN	 Projector START
 Auto START	 Curtain STOP	 Projector STOP
	 Curtain CLOSE	

4.5.2 Auditorium Panel

 House light ON	 Stage light ON	 Focusing + (option)
 House light HALF	 Stage light STOP	 Focusing - (option)
 House light STOP	 Stage light OFF	 Frame UP
 House light OFF		 Frame DOWN
 Auto START	 Projector START	 Projector STOP


► **NOTE**

- ▷ The standard auditorium panel I is equipped with a keyboard (4 x 4 buttons) and a potentiometer to set the sound level.
- ▷ The standard auditorium panel II is equipped with 2 keyboards (each 4 x 4 buttons) and a potentiometer to set the sound level.
- ▷ The RP4 auditorium panel is equipped with a keyboard (4 x 4 buttons) and the RP 4 remote panel for EMK 1 control.

5 Operation and Troubleshooting



5.1 Switch On / Switch-Off the Projector

Switching on

- Switch on the external power supply for the performance room.
- Switch on the main switch  (position "I").
 - The switch illuminates red.

► NOTE



After 10 seconds the microprocessors are initialized, now the projector control takes up the button commands.

- Thread the film (see chapter 5.2) and do all adjustments either manually or automatically by pushing the corresponding button.
- Push the button .
 - The projector is running, the ventilation is on, the xenon lamp is on.
- If necessary push the button  on projector's operating panel, after the start leader has run through.


► NOTE

Immediately after projector is switched on you must not manually turn the intermittent sprocket (e. g. for film threading) until the projector initialization is completed.

Switching off

- Push the button .
 - The dowsers close, the xenon lamp gets off, the projector stops and the ventilation is on (if temperature is more than 60° C).
- Switch off the main switch  (position "0").
 - The key lamp gets off.
- Switch off the external power supply for the performance room.

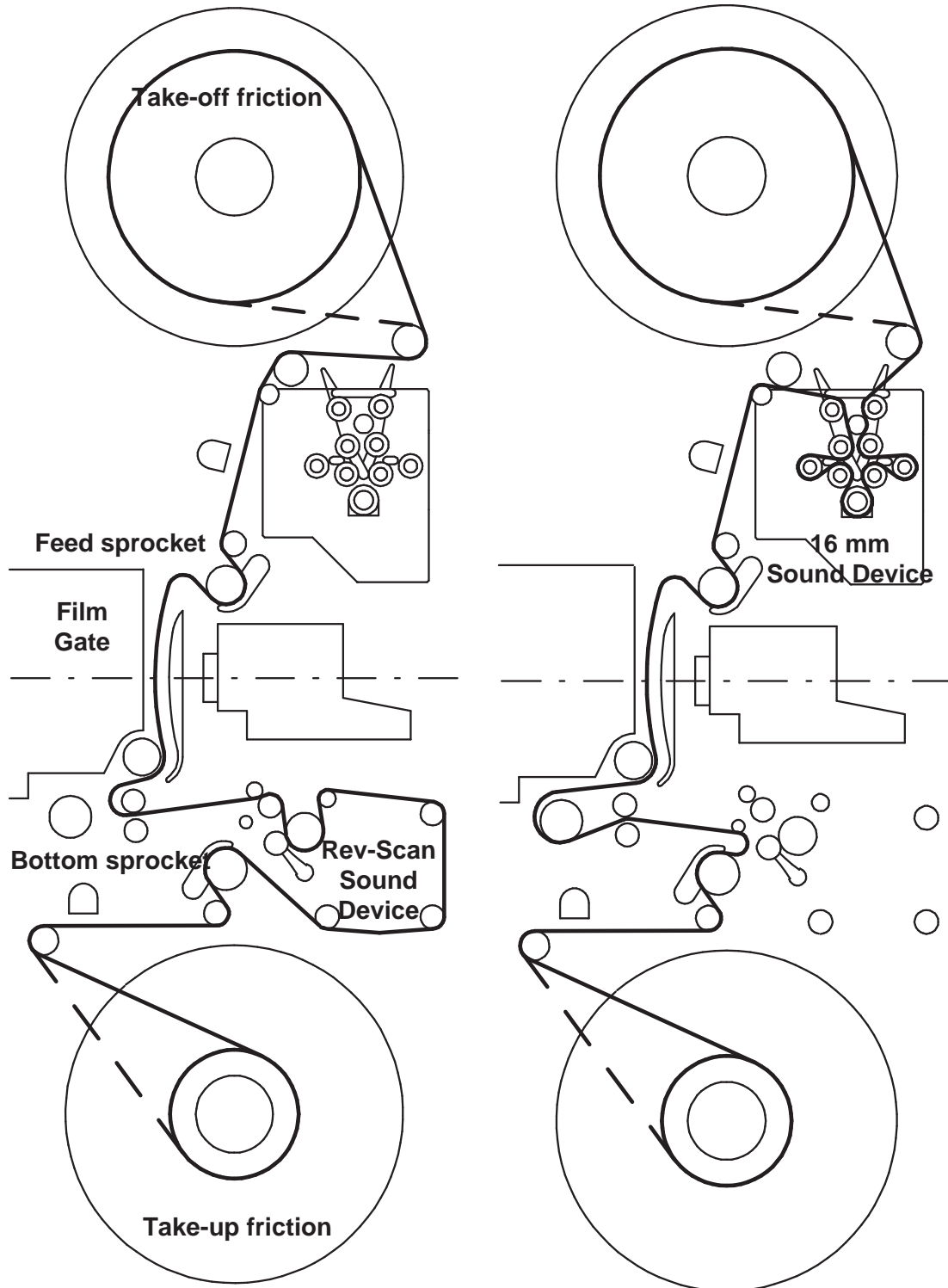
► NOTE

If you have an emergency stop, push the main switch  (position "0"), to cut the power.

5.2 Threading for Projection Operation

35 mm Film

16 mm Film



- Put the full reel on the upper reel shaft or prepare the platter system.
- 16 mm film: Thread the film through the guide rollers to the 16 mm sound device.
- - Open the sprocket pad shoe.
 - Thread the film in the feed sprocket (all perforations engaged in sprocket teeth).
 - Close the pad shoe.
- Thread the film in the film gate and close the film pressure skate.
One whole frame must be centred vertically in front of the aperture opening.
There is a small light inside the aperture to assist in centring.
Assure the film is centred horizontally between the ceramic discs.

A film loop of about 4 frames - 16 perforations (35 mm film) / 10 frames - 10 perforations (16 mm film) must be left both just above and just below the gate!

If the loops are too big the film will touch stationary parts and be scratched. If the loops are too small the film may break, the image may jump, or the sound may warble.

- Thread the film through the guide rollers to the sound head (35 mm film) and then to the bottom sprocket. The sound pressure roller may be lifted to ease threading
- - Open the sprocket pad shoe.
 - Thread the film in the holdback/bottom sprocket (all perforations engaged in the sprocket teeth).
 - Close the pad shoe.
 - Verify the loop below the gate is still OK.
- Wind-up the film several times around the take-up reel or lead the film to the “take-up” level of the platter system.



ATTENTION

If the projector was switched off with a threaded film the film loops and the film position must be checked when the projector is switched on again.

5.3 Operation at Different Speeds

► NOTE

- ▷ The xenon lamp will be switched on when film is running forward (DIP 7 is OFF).
If DIP 7 is ON the xenon lamp will ignite at the first projector start and will get off when projector will be switched off.
- ▷ The dowser will be open when projection speed is more than zero.
- ▷ All switching and direction changes are to be done when projector is off.



start forwards



press "in" selects 25 fps (factory-set) - press "out" selects 24 fps (factory-set)



stop the forward or optional reverse running






start reverse (optional for projectors with reverse running unit)





selects 24 fps or VARIA speed (optional)

5.3.1 Projection / Forward Running at 24 fps or 25 fps (standard)

- To start press .
- Press "in"  to select the speed of 25 frames/seconds (factory-set), press "out" to select the speed of 24 frames/seconds (factory-set).
- Pushing  you can stop the forward running of projector.

5.3.2 Reverse Running (option)

- To start press .
- Pushing  you can stop the reverse running of projector.

► NOTE

The reverse running speed is factory-set (in frequency inverter).

5.3.3 Projecting at VARIA Speed (option)

At VARIA the projector runs in step mode - it projects forwards and optional reverse from 10 fps to 30 fps.



Press "in" activates the VARIA function - press "out" activates 24 fps.



Select the desired projection speed of 10 - 30 fps by turning the VARIA rotary switch.




Press to start.



Press to stop the projection running.

5.4 Change-Over Operation



- Push  switch "in" on both projectors (provided the projectors are coupled with one another), to activate the change-over function.
- The dowsers of the two projectors open and close alternatively.
- The change-over projection can be started on any projector.


► NOTE

See also chapter 8.4.5, coupling scheme for two projectors in change-over operation.

5.5 Changing/Switching the Film Format

- Switch off the projector.



- Position  to the desired format.
- Switch on the projector.

► NOTE

- ▷ You cannot switch at running projector.
- ▷ If a format is selected at powered-on projector it is necessary to switch off the projector and then switch on again to activate the new format.

5.6 Troubleshooting

5.6.1 General Hints

Even though we produce high quality, reliable equipment, there still can be problems due to incorrect operation, poor maintenance, incorrect procedures etc.

This chapter has information about some common problems and about solving those problems. It is not possible to cover all possible problems in an operating manual; we suggest each owner develops a relationship with a competent cinema service provider.

► NOTE

- ▷ Items marked (service) usually require experienced service technicians.
- ▷ Basically there are two types of errors:
 - Type 1 errors: Projector won't run/stops immediately
 - Type 2 errors: Errors which do not stop projector

5.6.2 Projector Troubleshooting Chart (Type 1 errors)

Error	Cause	Solution
Nothing works	<ul style="list-style-type: none"> - Main power is not available - Loose main power connection - 24 V DC supply failed - 24 V DC fuse on main terminal blown 	<ul style="list-style-type: none"> - Check fuses or circuit breakers - Check main power connections - Change (service) - Change
Motor won't run, pilot lamp is on, relays move	<ul style="list-style-type: none"> - Frequency inverter wiring loose - Frequency inverter defective 	<ul style="list-style-type: none"> - Check inverter connections - Change (service)
Motor runs, pilot lamp is on, sound-head LED won't lit	<ul style="list-style-type: none"> - Fuse blown on LED power supply board 	<ul style="list-style-type: none"> - Check all, replace if blown

5.6.3 Projector Troubleshooting Chart (Type 2 errors)

Error	Cause	Solution
Noisy operation	<ul style="list-style-type: none"> - Film is threaded incorrectly - Gears are worn 	<ul style="list-style-type: none"> - Thread correctly - Change
Rollers don't turn	<ul style="list-style-type: none"> - Poor cleaning - Roller worn or damaged 	<ul style="list-style-type: none"> - Clean regularly with alcohol - Change
Film break when starting the film run	<ul style="list-style-type: none"> - Frictions are not adjusted correctly - Friction shafts are running dry 	<ul style="list-style-type: none"> - Adjust - Lubricate with Cardan oil

Error	Cause	Solution
Picture moves vertically (jumps)	<ul style="list-style-type: none"> - Skate pressure isn't adjusted correctly- - Skate height isn't adjusted correctly - Film print defective [verify with test film] - Skate is worn - Intermittent sprocket damaged 	<ul style="list-style-type: none"> - Adjust - Adjust - Get new print - Change - Change (service)
Picture moves horizontally (waves)	<ul style="list-style-type: none"> - Ceramic discs are blocked or dirty - Ceramic discs are worn [rare] 	<ul style="list-style-type: none"> - Remove and clean - Change
Perforation damage in direction of travel	<ul style="list-style-type: none"> - Skate pressure is too strong - Intermittent or upper/feed sprocket teeth have worn 	<ul style="list-style-type: none"> - Adjust - Change the worn sprocket(s)
Perforation damage against moving direction of travel	<ul style="list-style-type: none"> - Take-up friction is too strong - Lower/holdback sprocket teeth have worn 	<ul style="list-style-type: none"> - Adjust - Change the worn sprocket
Perforation side damage	<ul style="list-style-type: none"> - Sprocket teeth are damaged - Pad shoe is damaged - Film gate position is not correct [rare] 	<ul style="list-style-type: none"> - Change sprocket - Change pad shoe - Adjust
Scratches on film	<ul style="list-style-type: none"> - Film loop is too large - Emulsion particles / dirt on rollers - Rollers, skate, and/or film runner strips are defective or worn 	<ul style="list-style-type: none"> - Thread film correctly - Clean - Change the worn or defective part
Picture blurring	<ul style="list-style-type: none"> - Shutter is not adjusted correctly - Skate pressure too low 	<ul style="list-style-type: none"> - Adjust (service) - Increase pressure
Soft image	<ul style="list-style-type: none"> - Dirt on lens elements 	<ul style="list-style-type: none"> - Properly clean front / rear of lens
Unable to stay in focus	<ul style="list-style-type: none"> - Excessive heat from xenon lamp 	<ul style="list-style-type: none"> - Decrease xenon current and/ or use IR heat filter - Replace damaged IR heat filter - Make sure light is properly distributed so there is no "hot spot"
Misframed image	<ul style="list-style-type: none"> - Incorrect threading - Misframed splices 	<ul style="list-style-type: none"> - Thread properly - Re-make specific bad splice

5.6.4 Analog Sound

Error	Cause	Solution
No sound / some channels missing	<ul style="list-style-type: none"> - Sound processor failure - Amplifier failure - Speaker failure 	<ul style="list-style-type: none"> - Check plugs and power; call service - Check if sound track is threaded on the correct side - Check / replace exciter lamp (standard sound) or red LEDs (rev. scan sound) - Check all equipment for blown fuses / tripped circuit breakers
Sound out of sync with picture	<ul style="list-style-type: none"> - Lower loop wrong size - Wrong threading path 	<ul style="list-style-type: none"> - Thread correctly - Thread correctly
Loss of high frequencies	<ul style="list-style-type: none"> - Dirty sound optics - Sound optics focused poorly 	<ul style="list-style-type: none"> - Clean with lens cleaner and Q-tip - Adjust sound optics' focus (service)
Garbled sound	<ul style="list-style-type: none"> - Scanning drum jammed - Sound pressure roller loose 	<ul style="list-style-type: none"> - Remove blockage; change or oil bearings - Adjust tension (service)
Hissing sounds	<ul style="list-style-type: none"> - Scratches on sound track - Dirt on sound track - Defective sound electronics 	<ul style="list-style-type: none"> - Replace print - Clean - Troubleshoot and replace (service)

5.6.5 Digital Sound

Error	Cause	Solution
No sound	- Check the following [also see the "no sound / some channels missing" section of "Analog Sound", above.]	<ul style="list-style-type: none"> - Film is encoded for digital playback - Digital sound processor is on - Processor is switched to the correct mode - Disk is loaded correctly and the right disk is in place [DTS only] - Film is threaded correctly
Sound out of sync with picture	<ul style="list-style-type: none"> - Loops wrong size - Wrong threading path 	<ul style="list-style-type: none"> - Thread correctly - Thread correctly
Poor digital sound	<ul style="list-style-type: none"> - Improper tension - Dirt on lens - Dirt on digital sound track - Scratches on digital track 	<ul style="list-style-type: none"> - Re-thread - Remove dust using compressed air - Clean digital sound track - Replace print

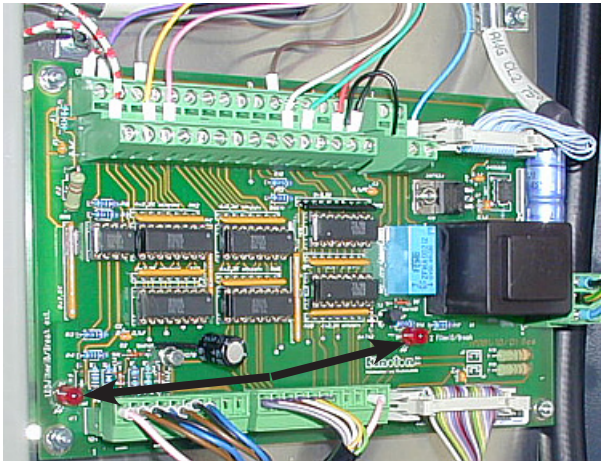
► **NOTE**

If there are any serious other problems please call local service.

5.7 Error Indication with LEDs

5.7.1 Interface Board

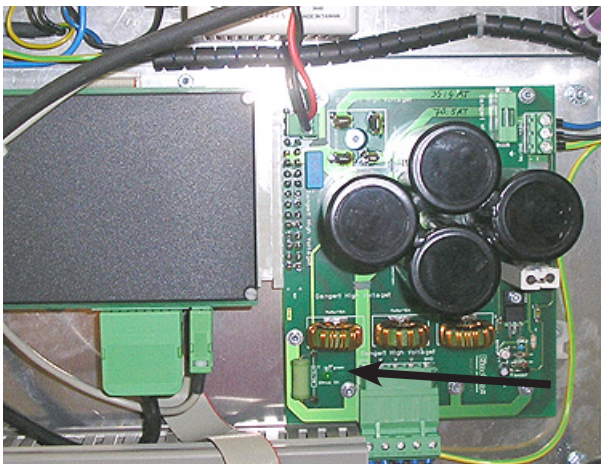
Two red break LEDs (arrows) are mounted on the interface board.



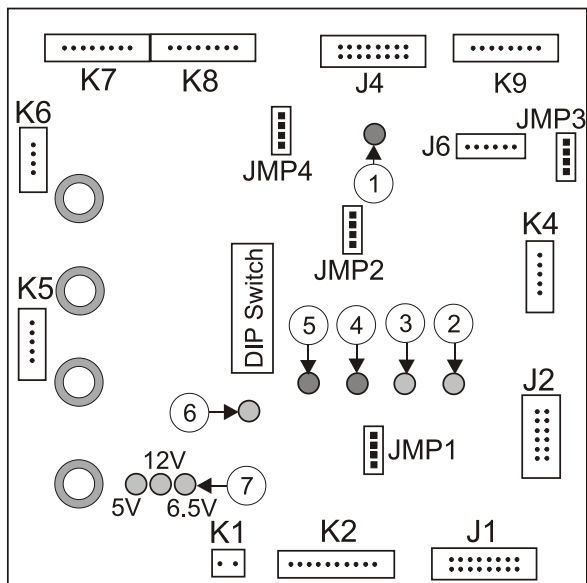
- The left LED (in the near of the projector door) labelled with **Filmriss/break ext.** illuminates only if there is an external film break (e. g. on the non-rewind system).
- The right LED labelled with **Σ Filmriss/ break** illuminates with every film break.
- If both LEDs illuminate an external break was happened. If LED **Σ break** illuminates a break on the projector (internal) was happened.

5.7.2 FPS 300 Power Supply Unit

The green LED (arrow) on the power supply unit of the intermittent sprocket motor illuminates if there is an intermediate circuit voltage available.



5.7.3 Main Board



- ① Red: intermittent sprocket drive is faulty
- ② Green: shutter motor runs synchronously
- ③ Green: shutter frequency is stored
- ④ Red: shutter rotates too slow
- ⑤ Red: shutter overload voltage is on
- ⑥ Green: shutter is open
- ⑦ Green: voltage values are ok (5 V, 12 V, 6.5 V)

6 Cleaning / Maintenance / Repair

6.1 General Hints



ATTENTION

- △ Any work on the electric supply wiring must be carried out by electricians.
- △ Make sure that nobody starts the projector while you are working on it.
For all maintenance, cleaning and repair you must disconnect the projector from its power supply (switch off the main switch).
- △ All adjustments must be carried out by experts.

Because of using many maintenance-free parts, the consumption of material and the expenditure of time for maintenance work and repair are reduced to a minimum.

The necessary maintenance and cleaning work may be performed by the projector's operators. This work has to be carried out regularly and carefully. See the following lists regarding the schedule for this work.

6.2 Cleaning

► NOTE

The film print should not be used oily or dirty with antiblocking agents, but always clean and dry.

After each show

Component	What is to do?
Film path / aperture	Clean with a soft toothbrush or cloth / Blow out with air pressure.
Sprockets / pad shoe	

Daily

Component	What is to do?
Film path / aperture	Clean with a soft toothbrush or cloth / Blow out with air pressure.
Sprockets / pad shoe	
Lens	Clean with a lens cleaning brush.



ATTENTION

- △ Using air pressure can make problems, because the dirt will not be absorbed but pressed into bushings and optics.
- △ Never use sharp objects to remove particles from film path.

Every 2 weeks

Component	What is to do?
Ceramics roller	Remove the ceramics rollers and then remove the dirt in the holes by using air pressure. Clean the ceramics roller with a alcohol moisturized cloth.

Every 3 months

Component	What is to do?
Film break sensor	Clean the film break sensor with a soft cloth.
Main drive motor / fan	Blow out the dust with pressurized air.
Guide rollers	Clean the guide rollers and roller shafts with alcohol.
Spool shafts	Lubricate with Esso universal oil.

Every 6 months

Component	What is to do?
Shutter / shutter housing	Clean the shutter housing with pressurized air. Clean shutter edges with a soft toothbrush.
Lens turret (if existing)	Clean the coding plates and the sensors on the sensor board with a Q-tip moisturized with Isopropyl or Isopropanol.



ATTENTION

Do not blow with pressurized air into the rotor - particles can be blown into the rotor and block the rotation.

6.3 Maintenance

Every 3 months

Component	What is to do?
Lens holder	Lubricate the lens holder guidance with Cardan oil, type 8657
Aperture changer (if installed)	Clean the part of the shaft above the film path with a cloth, and the threaded part of the shaft (inside the back cover) with a brush. After cleaning lubricate the threaded part of the shaft with ball bearing grease or Esso universal oil. Do not lubricate the brass tube/non threaded parts of shaft!

Every 6 months

Component	What is to do?
Reverse-scan sound device	Check O-rings on sound pressure roller. Check all rollers, whether they run easily.

Annually

Component	What is to do?
Sound reproducer	Lubricate the pressure roller ball bearings with a drop of Cardan oil, type 8657. Do not use any other lubricant! Lubricate the sound drum shaft with 1 drop of Esso universal oil.

► NOTE

- ▷ Cardan oil is very pasty therefore the ball bearings will be retarded for a proper film run. By getting move the guide roller with one finger, the roller has to stop at last after a half of turn. Otherwise you have to clean the bearing and then fill it with Cardan oil.
- ▷ You must not use any oil or grease!

Water cooling (if existing)	Empty and clean and refill coolant. Check whether pump and refrigeration system are sealed and working properly.
-----------------------------	--

6.4 Repair and Adjustments

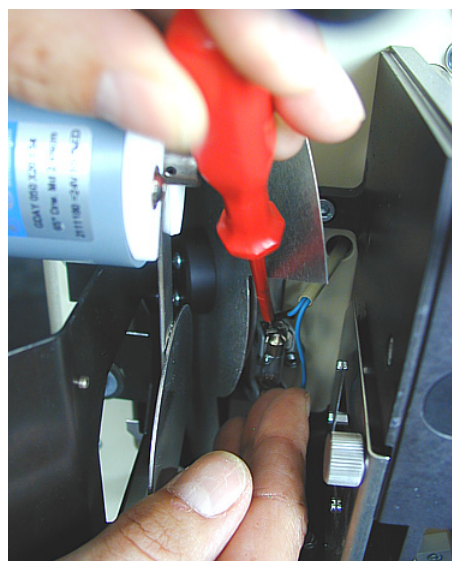
6.4.1 Changing the Pilot Lamp



ATTENTION

Before opening the shutter housing, wait until the shutter stands still!

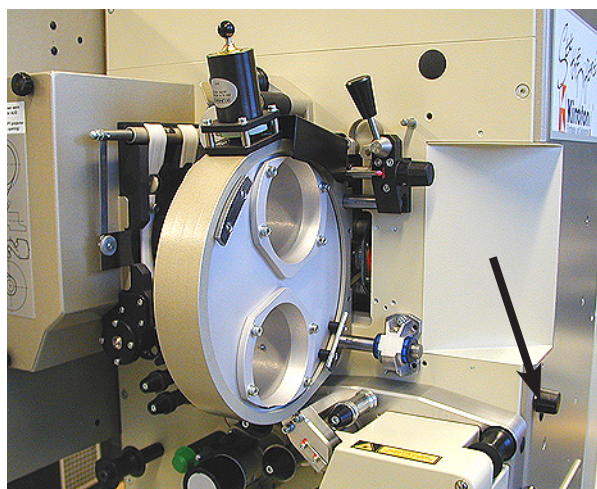
- Remove the shutter housing.
- Put screw driver behind the lamp socket (arrow) and lift the lamp out of the socket.
- Push the new pilot lamp into the socket and close shutter housing.



6.4.2 Adjusting the Pressure of the Skate

The correct adjustment of the film pressure skate is mandatory in order to run the film easefully and steady-going and with minor wear and tear of projector and film copy.

- Reduce the skate pressure by turning the adjusting knob (arrow) such that the picture begins to shake vertically on the screen.
- The projector running noise becomes louder and more unsteady.
- Increase the skate pressure until the running noise becomes quietly and steadily and the picture steadiness is correctly.

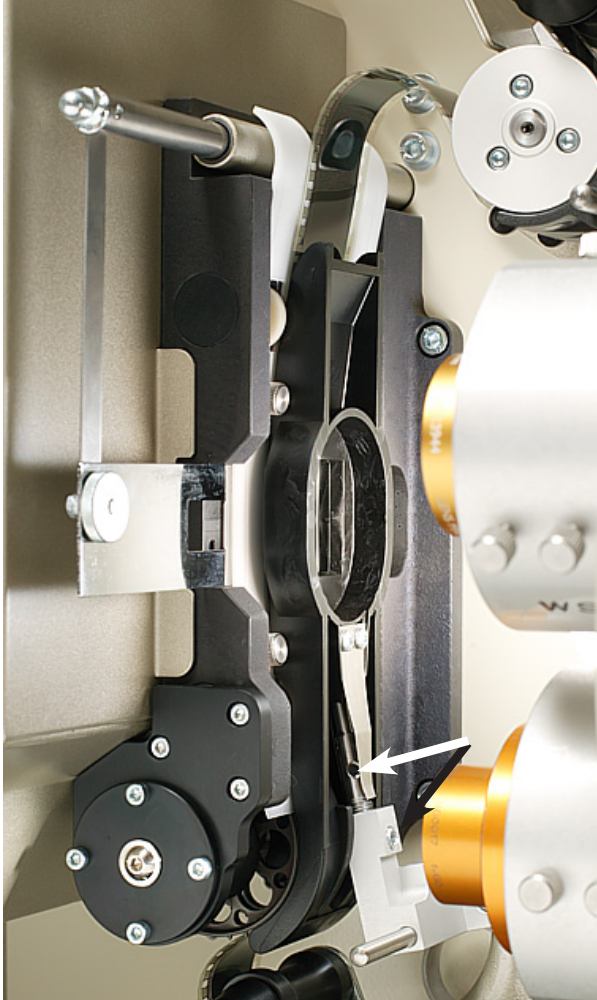


► NOTE

- ▷ Only tighten the film pressure skate as much as is absolutely necessary!
- ▷ Pressure too low:
 - The picture shakes on the projecting screen.
 - Loud noise
- ▷ Pressure too high:
 - The sprocket teeth, the film perforations, the film pressure skate and the runner strips will wear excessively.
 - Film emulsion will be left in the gate.
- ▷ The necessary pressure of the skate depends on the used film material.
It is recommended to check the skate pressure again, after splices have run through the film gate and also after the film material has been changed.

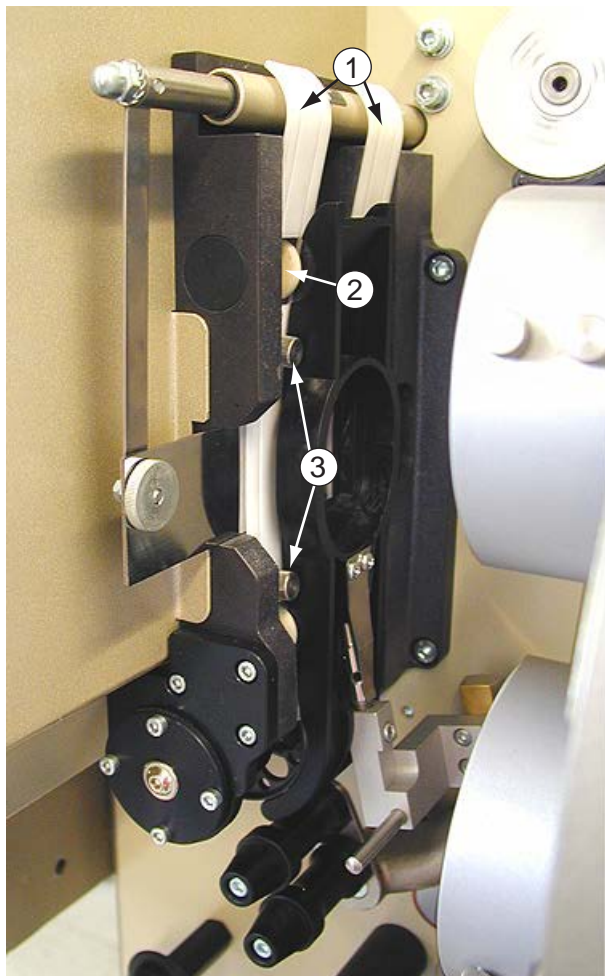
6.4.3 Adjusting the Film Pressure Skate Height

The film pressure skate has to be adjusted so that it rides perfectly on the film gate and the intermittent sprocket.



- Loosen the setscrew (black arrow).
- Insert 2 superimposed film layers into the film gate.
- Screw the ball pin (white arrow) out or in to the desired length - the skate should just not be moved vertically. Use an Allen wrench to rotate it.
- Without any film layers in the film gate the skate must have clear tolerance.
- When the adjustment is adjusted correctly fasten the setscrew again.

6.4.4 Changing the 35 mm Film Runner Strips

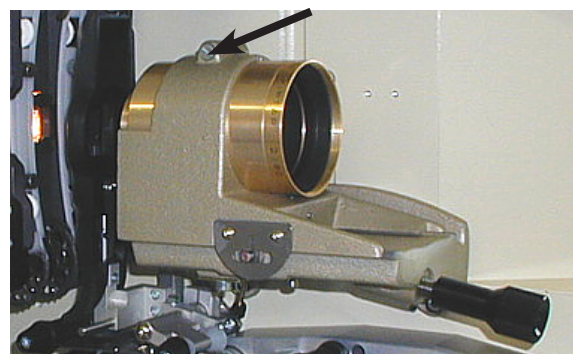


- ① Film runner strips (2)
- ② Ceramic rollers (2 per strip)
- ③ Knurled fastening screws (4)

- Loosen the knurled fastening screws and remove the old runner strips and insert the new runner strips.
- They must lay in parallel to the vertical film gate edges. The small spring-suspended ceramic rollers must have a free clearance.
- The seat is correct, if the conic ending running strips are lying lightly on the sprocket without touching the teeth, so that a perfect film run even with splices is assured in both directions.
- Tighten the knurled screws.

6.4.5 Adjusting the Lens Holder

- For setting up lenses, set scale in the mid-position.
- Loosen the clamping screw (arrow) and push the lens into the holder until picture is sharp (basic adjustment).
- Tighten the clamping screw again.
- Repeat the adjustment for each lens without turning the focus knob.
- To adjust the picture focus finally turn the knob slightly as required.



6.4.6 Changing a Constant Speed Sprocket / Pad Shoe

- Loosen the locking nut (black arrow) and the adjusting nut (white arrow) of the pad shoe with the special tool – the spring will relax.
- Pull the pad shoe from its shaft.
- Loosen the film stripper setscrews (two black arrows) and remove the film stripper.
- Turn the sprocket locking screw (on sprocket surface) anticlockwise five to six turns to loosen the sprocket.
- Pull the sprocket from its shaft.



► **NOTE**

If the teeth of sprocket are worn on one side only, you can turn it and use the other side (not with combined sprockets). Otherwise you must replace the sprocket.

- Install the sprocket onto the shaft with a slight counter-pressure on the belt wheel in the projector.
- Tighten the locking screw on the sprocket again.

► **NOTE**

The sprocket end play should be between .0004" (0.01 mm) and .001" (0.03 mm).

- Put on the film stripper again and fasten the 2 stripper setscrews in a way that it does not touch the sprocket surface.
- Grease the pad shoe shaft with Cardan oil and then put the pad shoe onto the shaft.
- Place the torsion spring in the hole of spring cage and place the whole assembly in pad shoe again.

► **NOTE**

Be sure that spring end is placed exactly in hole of pad shoe.

6.4.7 Adjusting the Tension of the Pad Shoe Spring

- Loosen the locking screw (black arrow) with an Allen key.
- Adjust the tension of the spring by turning the adjusting ring (white arrow) clockwise with a special tool.
- The pad shoe pressure should be (measured on pad shoe with a spring scale):
 - 450 g \pm 50 g at open condition and
 - 150 g to 250 g at closed condition.
- After adjustment lock the spring by tightening the locking screw (black arrow) again.



6.4.8 Adjusting the Distance between Pad Shoe and Sprocket

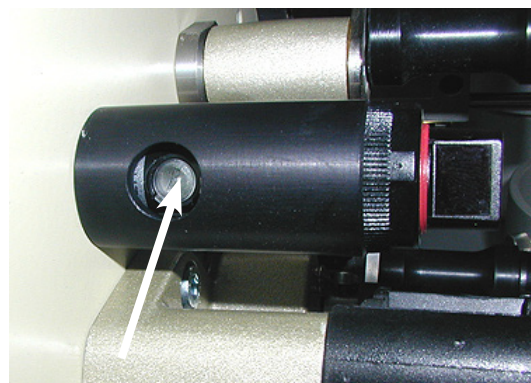
- Turn the adjusting screw (arrow) until a gap of 2 film layers is generated between the sprocket and the pad shoe.
- After adjustment paint-lock the adjusting screw.



6.4.9 Adjusting the IR Reflex Film Break Sensor

Position the sensor (arrow) in a way that it "looks" vertically towards the film surface. The sensor's view must be perpendicular to the film.

- To adjust the sensitivity of the sensor thread a film and turn the plastic screw (arrow) with a screw driver until the red LED (adjusting aid) blinks.
- Then turn the screw until the LED surely lights steadily.



7 Parts and Wearing Parts

7.1 Film Gate Parts

Film Gate	Fig.	Order No.
Film runner strip, white for 35 mm (2)	1A	1000 463 17005
Knurled screw for film runner strip fastening (35 mm)	1B	5322 505 10336
Film track key with aperture and runner strip, 16 mm	1C	1000 463 37014
Film track key with aperture + runner strip, Super 16	1D	1000 463 37015
Runner strip N16 for 16 mm	1E	1000 463 17023
Runner strip S16 for Super 16 mm film	1F	1000 463 17024
Ejector spring for film track key	1G	1000 492 97008
Ceramics roller (4)	1H	5322 532 50362
Film pressure skate black for 35 mm	1K	1000 463 17020
Film pressure skate for 16 mm film	1L	1000 463 17021
Film pressure skate for Super 16 mm film	1M	1000 463 17022

7.3 Feed/Bottom Sprockets

Sprocket Parts	Fig.	Order No.
Film stripper for feed and bottom sprocket	2A	1000 404 57008
Combined pad shoe (16 and 35 mm film)	2B	1000 525 37045
Pad shoe clip for 16 mm film)	2C	1000 525 37050
Nut for pad shoe	2D	5322 462 50027
Spring for pad shoe	2E	5322 492 40001
Hand wheel for bottom sprocket		1000 413 47002

7.4 Other Parts

Others	Fig.	Order No.
Focusing knob		1000 413 37001
Skate pressure adjusting knob		1000 413 37001
Knurled screw for shutter housing		5322 505 10192
Pilot lamp, 24 V / 3 W		0040 120 00059
Key lamp		1000 134 87005
Fuse 6.3 AT		4822 253 30031

Figure 1

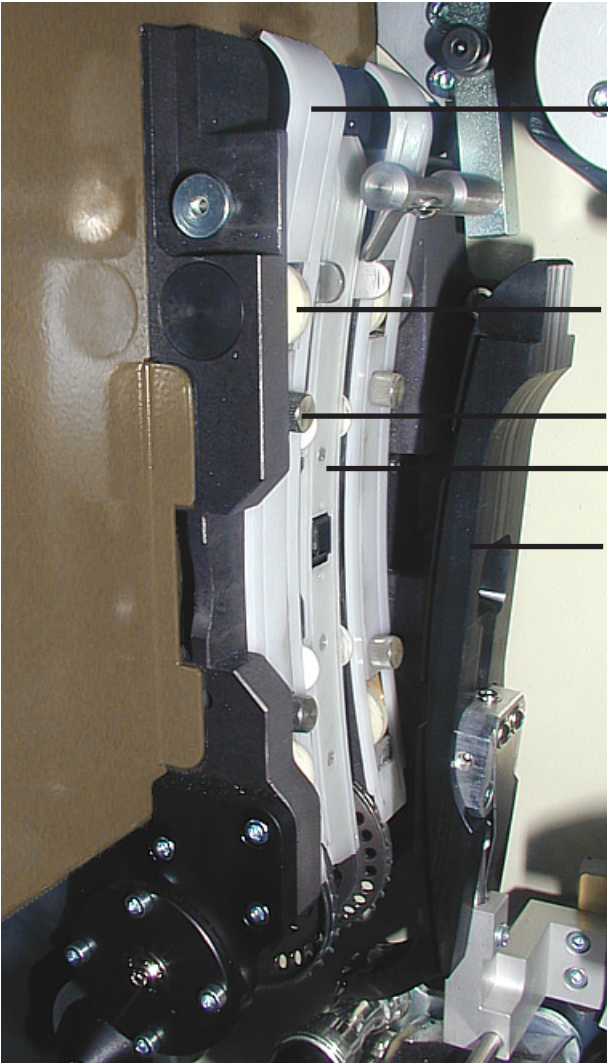


Fig. 1G

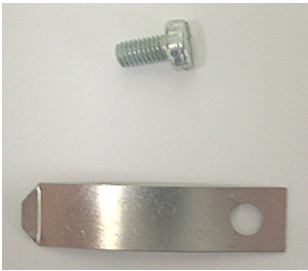


Fig. 1K



Fig. 1B



Fig. 1H

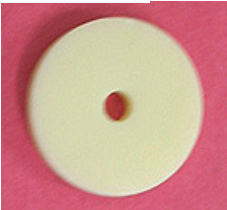


Fig. 1L



Fig. 1M



Fig. 1A

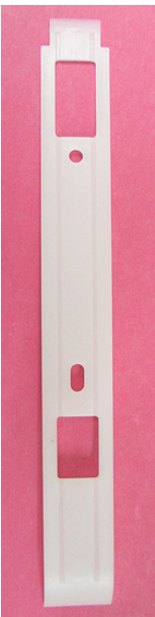


Fig. 1C + 1E

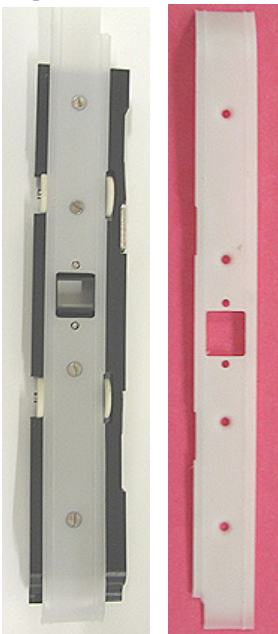


Fig. 1D + 1F

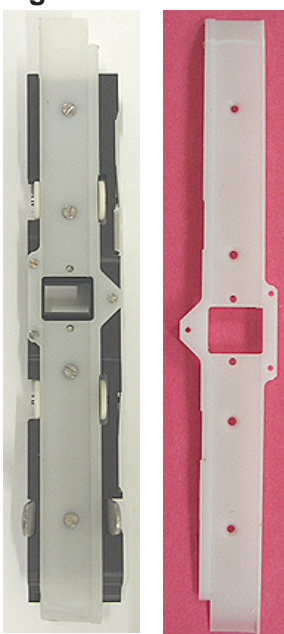


Figure 2

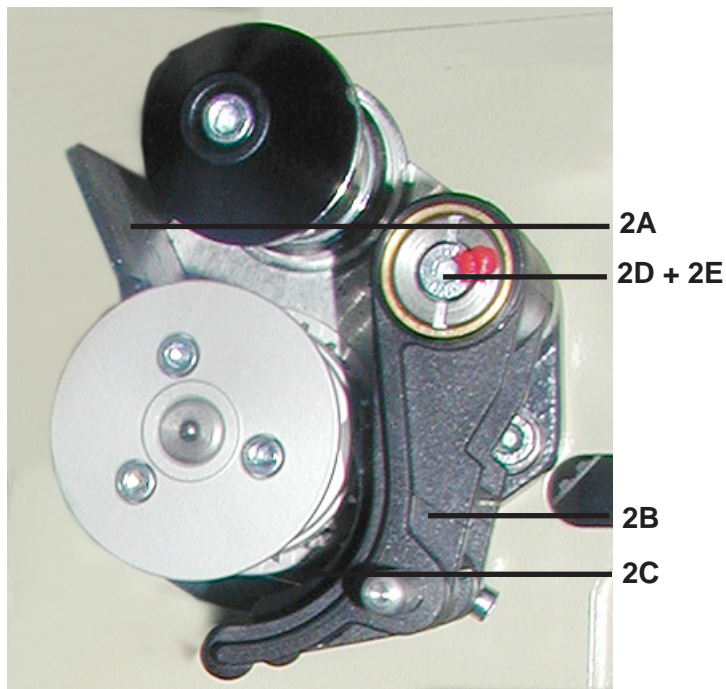


Fig. 2A

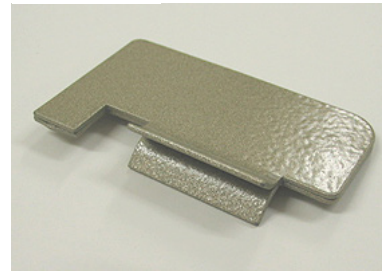


Fig. 2B

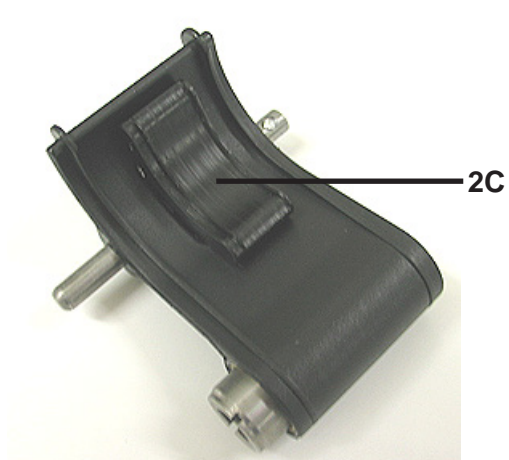


Fig. 2C



Fig. 2D



Fig. 2E



7.5 Parts for Drives and Motors

Part	Order No.
Knurled nut M8 for standard friction	1000 505 17006
Spring for standard friction	5322 492 50064
Felt disks for all Kinoton frictions	1000 532 57007

7.7 Film Spools

Film Spools	Order No.
Film spool Ø 9 mm, 600 m film	0040 060 00050
Film spool Ø 12,7 mm, 1800 m film	0040 060 00765
Film spool Ø 12,7 mm, 2000 m film	0040 060 00770

7.8 Friction Shafts and Interchangeable Flanges with Shafts (35 mm)

Part	Order No.
Interchangeable flange, shaft Ø 12.7 mm (USA)	1000 535 77035
Interchangeable flange, shaft Ø 12.7 mm (USA), quick change	1000 535 77067
Kodak core adapter for Ø 12.7 mm, (USA)	1000 705 37013
Interchangeable flange, shaft Ø 12.7 mm, quick change	1000 535 77024
Interchangeable flange, shaft Ø 12.7 mm, locking bar, quick change	1000 535 77066
Kodak core adapter for Ø 12.7 mm	1000 705 37014
Interchangeable flange, shaft Ø 9 mm, cross bar	1000 535 77025
Interchangeable flange, shaft Ø 9 mm, cross bar, quick change	1000 535 77040
Kodak core adapter for Ø 9 mm,	1000 705 37014
Interchangeable flange, shaft Ø 12.7 mm with locking nut	1000 535 77039
Interchangeable flange, shaft Ø 12.7 mm with locking nut, quick change	1000 535 77068
Interchangeable flange, shaft Ø 5/16", cross bar	1000 535 77027
Interchangeable flange, shaft Ø 5/16", cross bar, quick change	1000 535 77063
Kodak core adapter for Ø 5/16"	1000 705 37016
Interchangeable flange, shaft Ø 9 mm with locking nut	1000 535 77033
Interchangeable flange, shaft Ø 9 mm, with locking nut, quick change	1000 535 77064
Interchangeable flange, square shaft Ø 8 mm, 16 mm film	1000 535 77028
Kodak core adapter for Ø 8 mm	1000 705 37016
Interchangeable flange, square shaft Ø 8 mm, 16 mm, lock nut, quick change	1000 535 77031

7.9 Single Apertures

Part	Order No.
Single aperture complete CS 2.35:1	5322 451 10009
Single aperture complete NS 1.37:1	5322 451 10011
Single aperture complete 1.85:1	5322 451 10012
Single hole aperture complete	5322 451 10013
Single aperture for silent movies	1000 451 17014
Single aperture complete Super 35 mm	1000 451 17015
Single aperture finished size 1:1.37	1000 451 17023
Single aperture finished size 1:1.66	1000 451 17024
Single aperture finished size 1:1.85	1000 451 17030
Single aperture finished size 1:2.39	1000 451 17034
Single aperture S35/1:2.39	1000 451 17029
Single aperture CS+1:1.66	1000 451 17031
Single aperture S35/1.1.85	1000 451 17032
Single aperture S35/CS	1000 451 17033
Heat protection aperture 16 mm	1000 451 17004
Heat protection aperture Super 16 mm	1000 451 17011

7.10 Adapter Rings for 35 mm Lenses

Part	Order No.
Adapter ring 1 for ISCO Cinemascope Ultra-Star 55 / 60	0070 410 00003
Adapter ring 2 for Schneider Super-Cinelux 50 / 52,5 / 55 / 57.5 / 60 ISCO Ultra-Star HD 42 / 45 / 48 / 50 / 55 / 60 / 65 / 70 / 75 / 80 / 85 / 90 / 95 ISCO Ultra-MC 35 / 45 / 50 / 55 / 60 / 65 / 70 / 75 / 80 / 85 / 90 ISCO Cinemascope Ultra-Star 50	0070 410 00018
Adapter ring 3 Schneider Super-Cinelux 28 / 30 / 32.5	0070 410 00015
Adapter ring 4 Schneider Super-Cinelux 42.5 / 45 / 47.5	0070 410 00017
Adapter ring 5 Schneider Super-Cinelux 35 / 37.5 / 40	0070 410 00016
Adapter ring 6 ISCO Cinemascope Ultra-Star HD 29 / 32 / 35 / 38 / 40	0070 410 00001
Adapter ring 7 ISCO Cinemascope Ultra-Star HD 95 / 100	0070 410 00002
Adapter ring 8 Schneider Super-Cinelux 2 / 90	0070 410 00019
Adapter ring 9 ISCO Ultra-Star-Plus 2.1 37.5/ 40/ 45	0070 410 00013
Adapter ring 10 ISCO Ultra-Star-CS	0070 410 00014
Adapter ring 11 Schneider Super-Cinelux 2/ 95	0070 410 00009
Adapter ring 70.6 / 62.5	0070 410 00010

8 Technical Data, Circuit Diagrams and Plans of Terminal Connections

8.1 Projector Data

Name	Cinema Projector
Type	FP 38 E PREMIERE
Machine No.	See data plate on housing.

Connecting Data

Power supply	120 V / 230 V
Frequency	50 Hz / 60 Hz
Pre-fuse	6.3 A (10 A)
Power max.	500 W (without xenon lamp)

Power and Operating Data

Nominal rotary frequency of main drive motor	1500 rpm
Power of main drive motor	100 VA
Framing	endless via remote control
Running speed	24/25 fps

Sizes and Weights

Components	Sizes	Weights
Projector	2340 mm x 750 mm x 424 mm	approx. 190 kg
Film reels	600 m / 1800 m / 2000 m	
Friction shafts	Ø 9 mm or Ø 12.7 mm	
Lens holder / turret	for lenses Ø 70.6 mm and Ø 101.6 mm	
Apertures	1:1.37 / 1:1.66 / 1:2.35	

8.2 Reverse-Scan Sound Device Data

Connecting Data

Power supply	24 V
Frequency	50 Hz / 60 Hz
Power max.	6 W

Power and Operating Data

Frequency response	analog: 30 Hz - 16 kHz \pm 1 dB digital: 20 Hz - 20 kHz \pm 0.5 dB
Wow and flutter	\leq 0.1%

8.3 16 mm Sound Device Data

Connecting Data

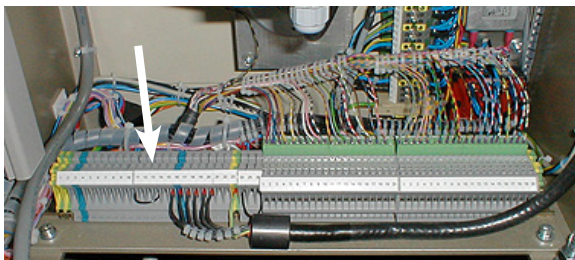
Power supply	24 V =
--------------	--------

Power and Operating Data

Frequency response	analog: 30 Hz - 16 kHz \pm 1 dB magnetic: 40 Hz - 12 kHz \pm 0.5 dB
Wow and flutter	\leq 0.1%

8.4 Plans of Terminal Connections

8.4.1 Plan of X1 Main Terminal Connections



Source (projector inside)	Color intern	No.	Color extern	Projector Outside
protect. conduct., ground (40) PE	gn/ye	1		mains connection 40
mains-phase (60) L1	bk	2		mains connection 60
mains-zero (20) PN	bl	3		mains connection 20
+24 V from control board K5-4	2/rd	4		24 V
24 V GND K5-3	2/bl	5		GND
relay dowser (FU 31) C/O 11	or	6		C/O
relay dowser (FU 32) C/O 14	or	7		C/O
relay RUN 11	gn	8		RUN
relay RUN 14	gn	9		RUN
** interface ext. film break K-29	rd/wt	10		ST200 E film break switch 37
* bridged	NC	11		ST200 E film break switch
** bridged	NC	12		other film break
** Interface ext. film break K2-30	rd/wt	13		other film break
spare	bl/wt	14		spare
L1/18	bk	15	wire 5	LH mains L1 60
N/19	bl	16	wire 6	LH mains N 20
relay XENON 21	br	17	wire 1	lamphouse (fan) 60A
relay XENON 24	br	18	wire 2	lamphouse (hour counter) 60B
relay XENON 14	wt	19	wire 3	lamphouse 122A
bridged	NC	20	wire 4	lamphouse 122
bridged	NC	21		xenon lamp rectifier enable
relay XENON 11	wt	22		xenon lamp rectifier enable
protect. conduct., ground (40) PE		23	gn/ye	LH + SH

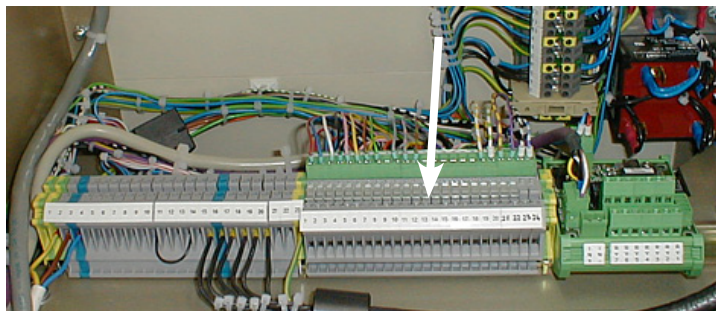
* terminals 11 and 12 are bridged when using the projector without a platter system

** terminals 12 and 13 and terminals 10 and 13 are bridged when using the projector with a platter system

Wire colors:

bk = black
 bl = blue
 br = brown
 gn = green
 or = orange
 rd = red
 wt = white
 ye = yellow

8.4.2 Plan of Projector Functions X2 Terminal Strip

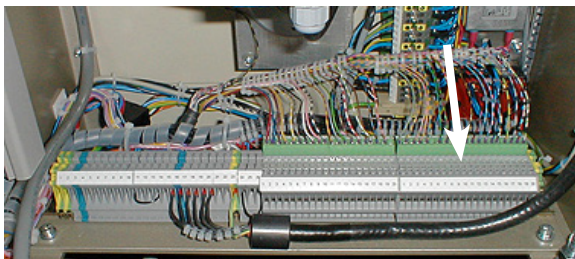


No.	Connection (source)	Color	Ø	Interface: Terminal / No.	EMK 1 Connection: No. (bk) Relay	
1	+ 24 V	rd	0.5			
2	- 24 V	bl	0.5			
3	Start FORWARDS	wt	0.5	K2 / 24	3	1
4	GND / com	bk	0.5	K2 / 1, 12, 13	19	1 + 2
5	Stop	rs	0.5	K2 / 25	35	2
6	Dowser OPEN	ye	0.5	K2 / 27	44	3
7	GND / com	bk	0.5	K2 / 1, 12, 13	43	3 + 4
8	Dowser CLOSE	or	0.5	K2 / 26	28	4
9	GND / com	bk	0.25	K2 / 1, 12, 13	23	5 + 6 + 7
10	Lens turret NS	gr	0.25	K2 / 16	39	5
11	Lens turret WS	or	0.25	K2 / 15	7	6
12	Lens turret CS	ye	0.25	K2 / 14	8	7
13	Focusing -	vio	0.25	K2 / 17		
14	GND / com	bk	0.5	K2 / 1, 12, 13		
15	Focusing +	rs	0.25	K2 / 18		
16	Framing DOWN	wt/gn	0.25	K2 / 21		
17	GND / com	bk	0.25	K2 / 1, 12, 13		
18	Framing UP	wt/bl	0.5	K2 / 20		
19	Sensor 1	wt	0.5	Auto start with EMK outboard sensor with SA2 / CCA3	17	Input 1
20	Sensor 2	gn	0.5	Sensor with EMK inboard sensor with SA2 / CCA3		

With CCA3, DMP1 or SA2 Automation System

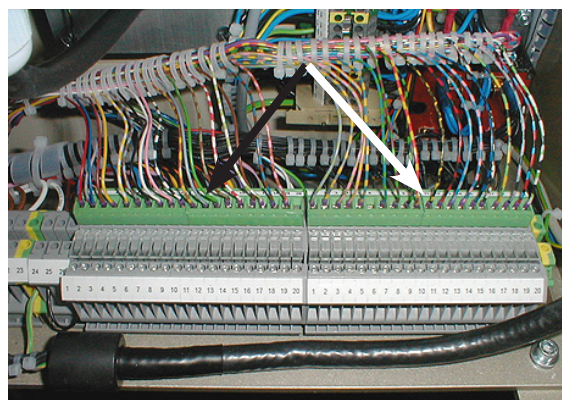
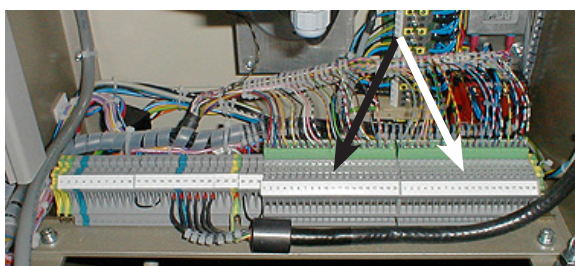
21	Sensor 3 (with CCA 3, DMP 1)	center sensor		
22	Reverse (with CCA 3, DMP 1 or SA 2)	K2-23		
23	External start (with SA 2)			
24	EMERGENCY (with CCA 3, DMP 1 or SA 2)			

8.4.3 Plan of Auditorium Functions X3 Terminal Strip



No.	Connection / Function	with EMK 1: No. (bk)
1	Curtain COM	37
2	Curtain OPEN	21
3	Curtain CLOSE	5
4	House light COM	36
5	House light ON	4
6	House light HALF	9
7	House light OFF	20
8	Stage light COM	38
9	Stage light ON	22
10	Stage light OFF	6
11	Masking COM	24
12	Masking NS	47
13	Masking WS	40
14	Masking CS	25
15	Tape ON Relay 18	15
16	Tape ON Relay 18	16
17	Tape OFF Relay 19	10
18	Tape OFF Relay 19	26
19 + 20	Reserve	

8.4.4 BWR Control Panel on Terminal Strips (X2 + X3)



- Connect the Phoenix plugs of the BWR control panel cable assembly (arrows) to terminal strip 2 (projector functions - black arrow) and to terminal strip 3 (auditorium functions - white arrow).

8.4.5 Sound Output on 8-pole Terminal Strip

solar cell connection

solar cell connection

solar cell connection

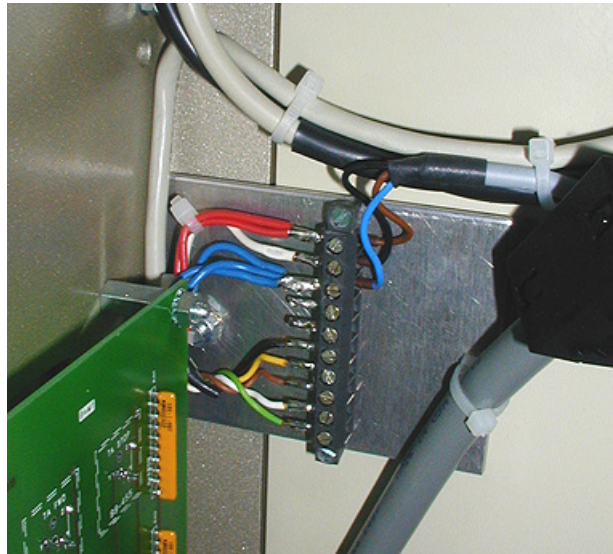
shield

sound output left - (yellow)

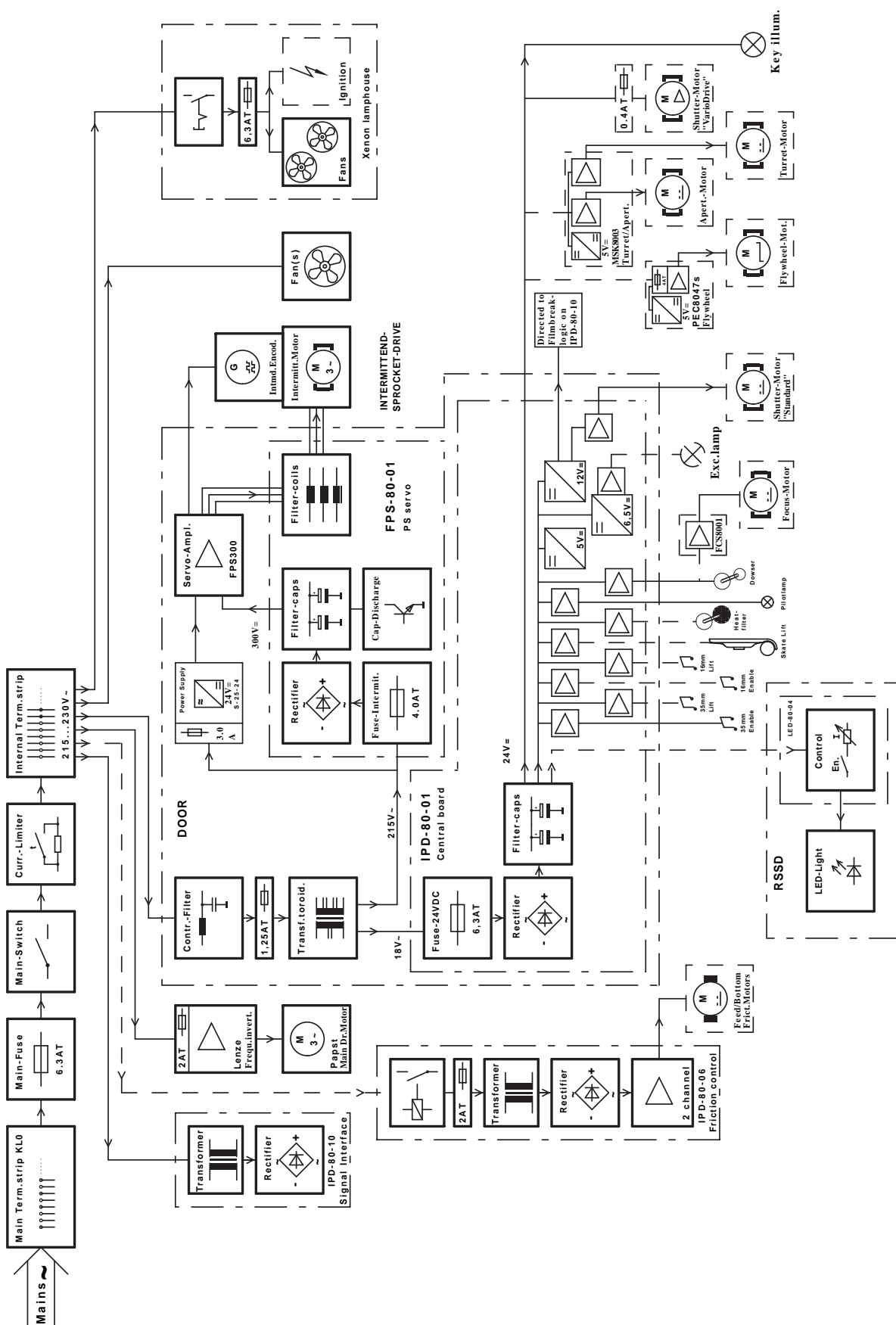
sound output left + (brown)

sound output right - (white)

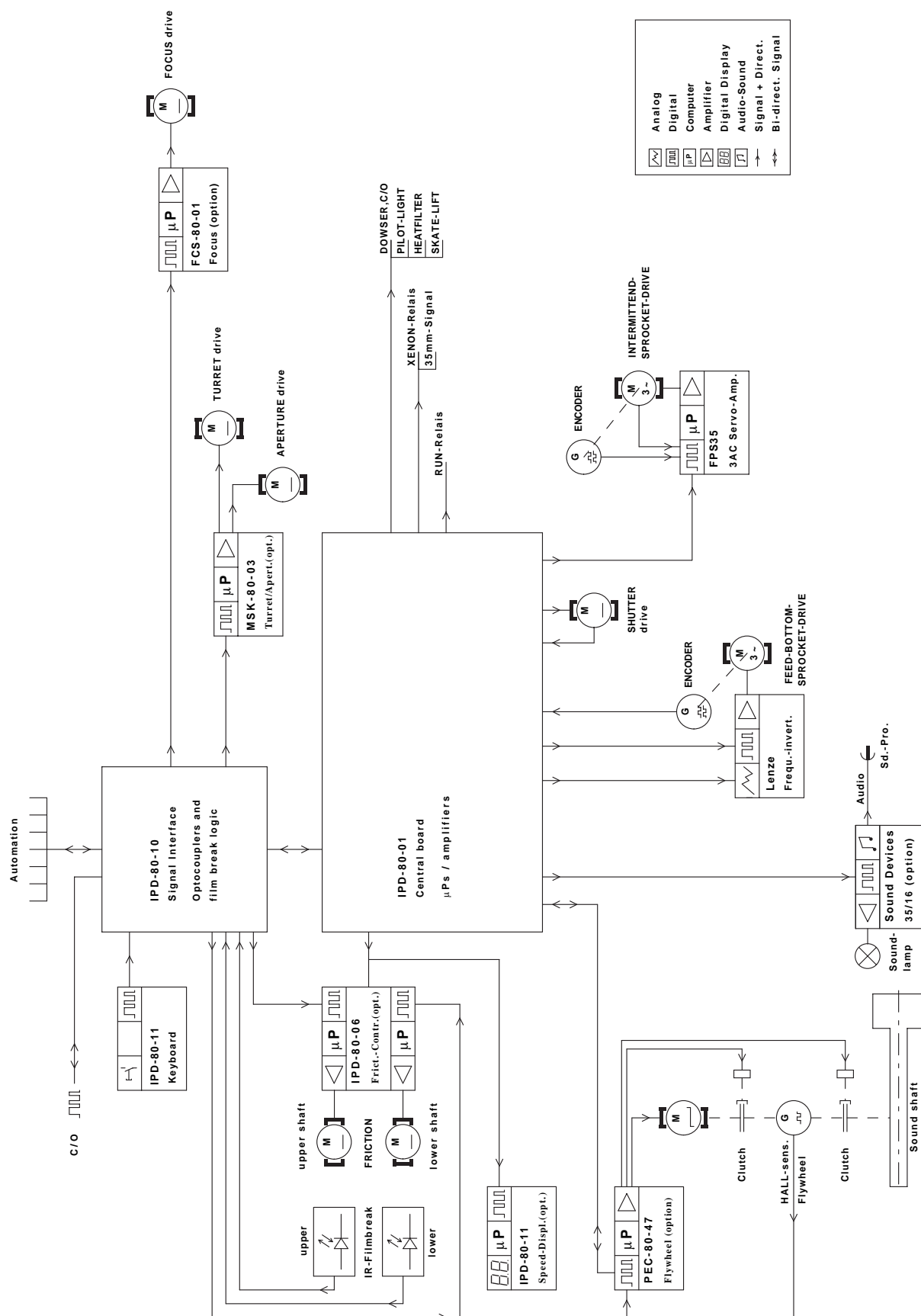
sound output right + (green)



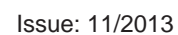
8.5.2 Block Diagram (Power)



8.5.3 Block Diagram (Signals)

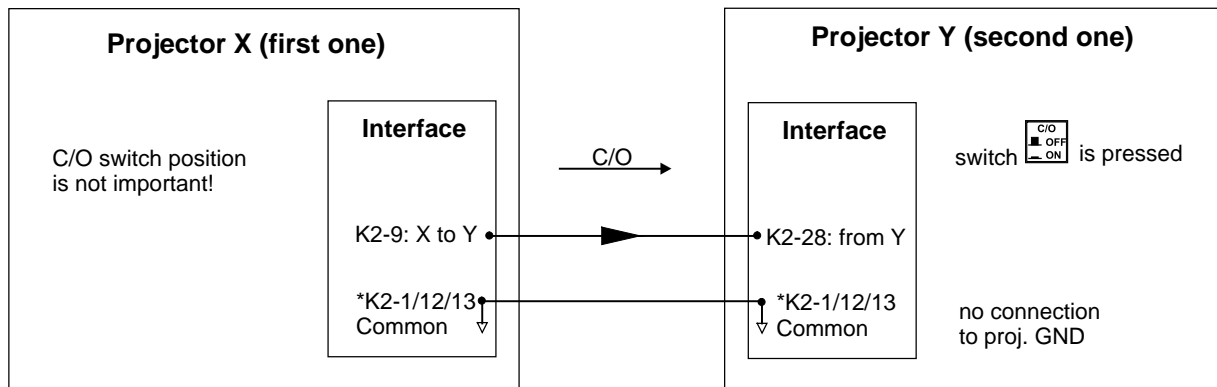


74



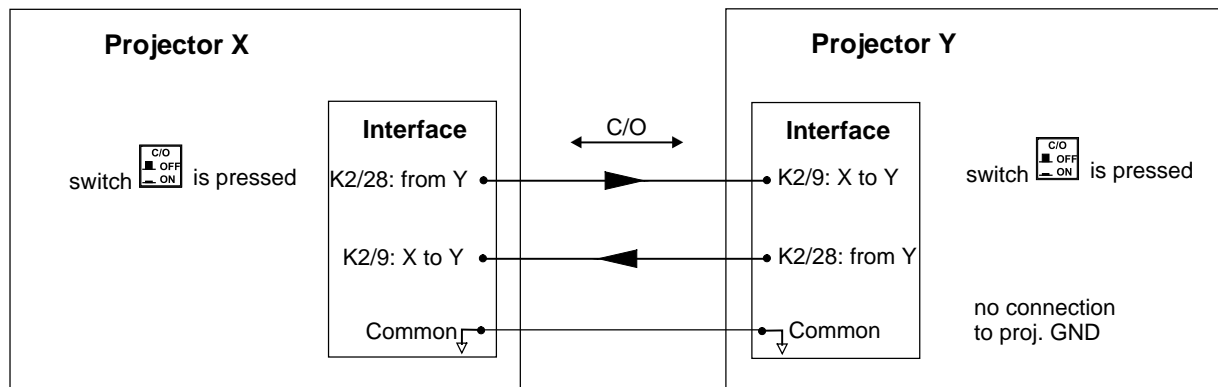
8.5.5 Two Projectors at Change-Over Operation

1. Projector X (first one) triggers the C/O signal



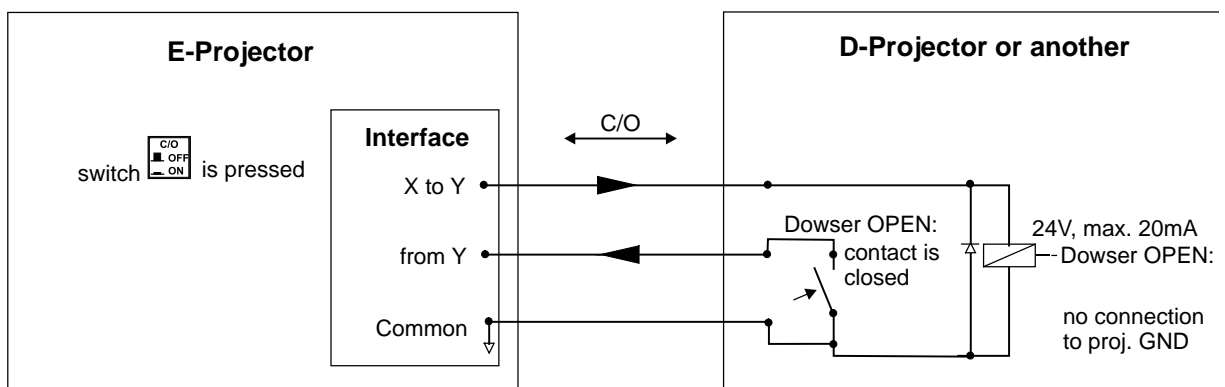
*1 or 12 or 13

2. Both Projectors X and Y can trigger C/O

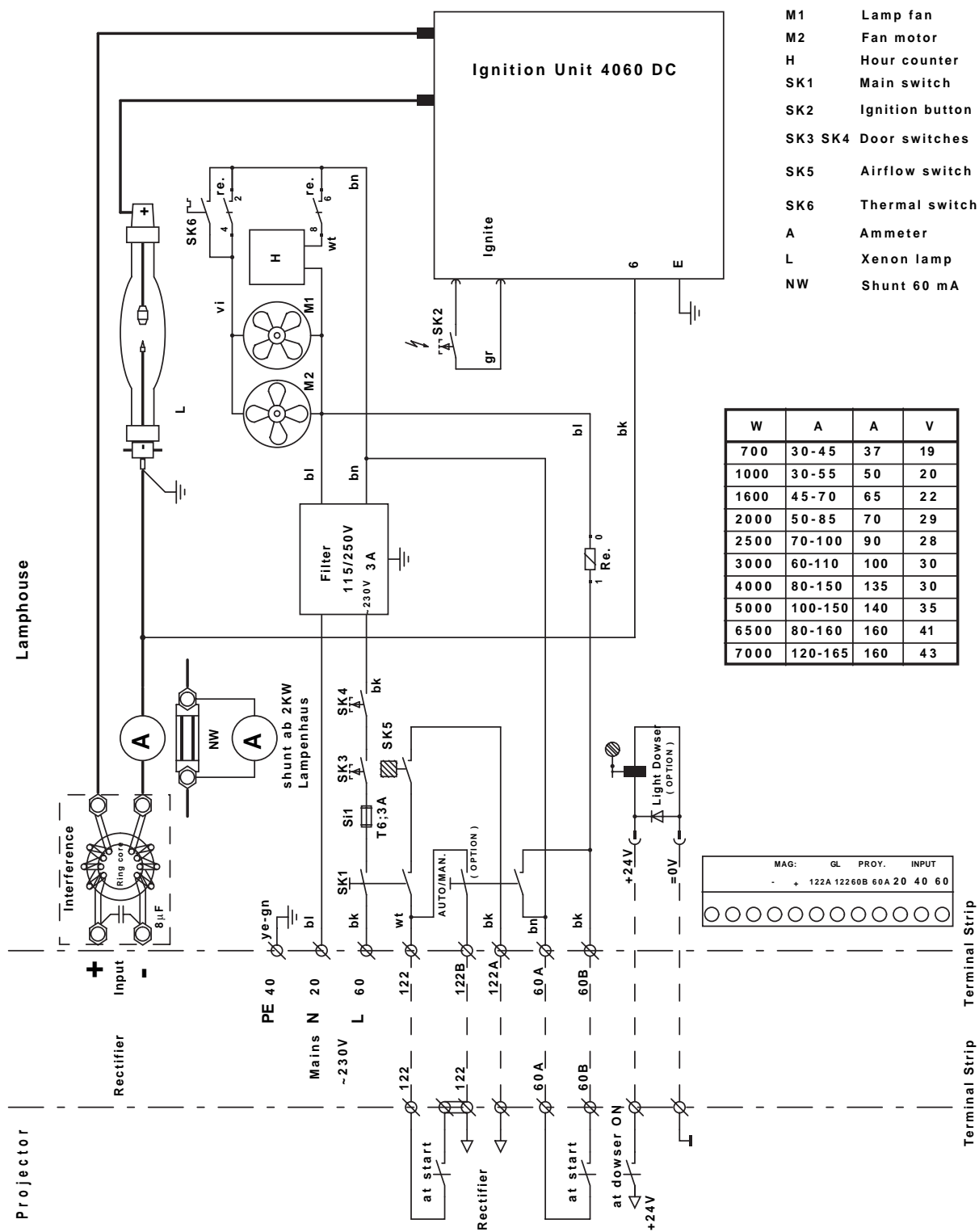


Coupling of an E-Projector with a D-Projector or another

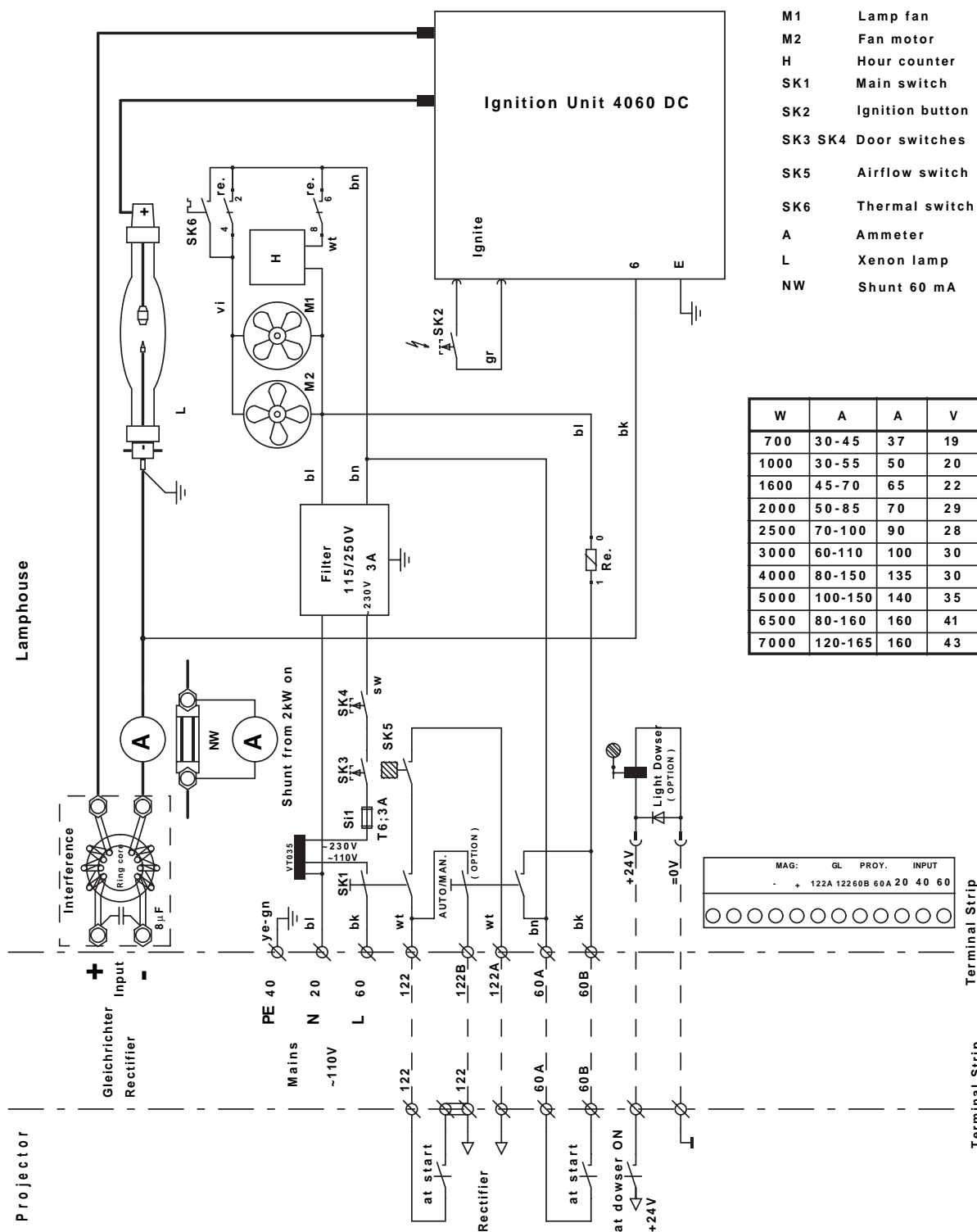
Both projectors can trigger C/O



8.5.6 Lamphouse for 230 V Mains Connection



8.5.7 Lamphouse for 120 V Mains Connection



EC Declaration of Conformity

Company name	Kinoton GmbH
Address:	Industriestr. 20a, D-82110 Germering
Machine designation:	Cinema Projector
Machine type:	FP 30 E / FP 38 E
Maschine serial number:	B1323

Relevant EC stipulations:

Machine regulation	2006/42/EG
Low Voltage regulation	2006/95/EG
EMC regulation	2004/108/EG

Standards:

if need be harmonized standards	EN 50091 part 1, EN 60034-5, EN 61000-6-1, EN 61000-6-2
if need be national standards	DIN 19090 part 1 and part 2, VDE 05030

and technical specifications

the above-named machine is developed, constructed and manufactured in accordance with above-listed EC regulations and in sole responsibility of

**Company: Kinoton GmbH
Industriestr. 20a
Germany 82110 Germering**

Place, date:	Germering, 11. 01. 2010
--------------	-------------------------

Signature:



Prenome, name:	Herbert Zipfel
----------------	----------------

Function:	Production Manager
-----------	--------------------